Ventura Countywide Stormwater Quality Management Program

2012-2013 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 13, 2013

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Executive Summary

This Annual Report discusses the Permittees' Permit compliance activities for the period of July 1, 2012 to June 30, 2013, the third 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 Annual 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; in its entirety it also serves as the Receiving Water Limitations Report. 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 Ventura Countywide Permittees, who contributed the information and data regarding their programs, were instrumental in the preparation of this Annual 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:

- Water quality at beaches throughout Ventura County remained among the best in the state.
- A program update was presented to the Regional Board including pollutant prioritization, success stories and challenges in Ventura County.
- Developed a Water Quality Index to distill the over 200 constituents monitored into an easy to communicate form, and continued the comprehensive data analysis effort, aiming to prioritize pollutants of concern in outfall and receiving waters that will in turn prioritize Program activities.
- Provided support funding to Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) for an Environmental Impact Report (EIR) for a single use bag ordinance. This EIR will be available to the Permittees who want to pursue a single use bag ordinance to reduce litter.
- Completion of a Hydromodification Control Plan, including susceptible area mapping, through an open stakeholder process. Continued implementation of the Technical Guidance Manual for new and re-development including providing an electronic application tool for projects to determine applicability and calculate retention volumes.
- Installed Watershed Identification Signs across the County, redesigned the Community for Clean Watershed website, and made over 7 million impressions through the Public Outreach program. Nineteen percent of those were made in Spanish.
- Organization and participation in the statewide Coastal Cleanup Day Event at 22 different beaches and inland waterways.
- The Stormwater Monitoring Program was able to achieve a 97.1% success rate in meeting program data quality objectives.

- Created a new website to better communicate the data collected by Stormwater Monitoring Program quality through a data visualization tool.

- Improved data evaluation and comparison to water quality objectives through a comprehensive review of Basin Plan, California Toxics Rule, and Program's water quality database stored values and programmed calculations. Any misreported information was identified, corrected and reported to the Regional Board. No additional constituents were discovered to cause or contribute to exceedances of water quality criteria.

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

The 2012/13 water year was exceptionally dry in Ventura County. Most monitoring sites received less than half the average annual rainfall making this one of the top six driest years on record and complicating monitoring efforts. Aluminum, *E. coli* and fecal coliform were commonly found at elevated levels at most sites during wet-weather events. *E. coli* and fecal coliform concentrations were also often elevated during dry-weather events, but not aluminum. Other constituents that were found at elevated levels during the 2012/13 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event), dissolved oxygen, dissolved copper (dry season only), total arsenic, total selenium, total ammonia, bis(2-ethylhexyl)phthalate, methylene blue active substances (MBAS), and pH (predominantly dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and simazine. Constituents that were seen at elevated levels at Mass Emission stations only once during the season include 2,4-Dinitrotoluene and the metals (total) arsenic, beryllium, cadmium, chromium, nickel, and thallium. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system.

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 CASQA's 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 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.

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 Annual 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 special studies to assist the Permittees in addressing the two pollutants of the highest priority, aluminum and E. coli, incorporating the Hydromodification Control Plan into the Technical Guidance Manual, and identification and elimination of dry weather flows.

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.

1.1 PURPOSE AND ORGANIZATION OF REPORT

The primary purpose of this Annual Report is to document the Permittees' continued compliance with NPDES Permit No. CAS004002/Order No. 10-108 (Permit) and efforts to improve water quality and comply with the Permit. Since the Permit did not require a Stormwater Management Plan this Annual 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.

This Annual Report discusses the Permittees' Permit compliance activities for the period of July 1, 2012 to June 30, 2013, the third 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. In its entirety it also serves as the Receiving Water Limitations Report.

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 2012/13 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.

Ventura County from the air

- **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, and is also considered to be the Program's Receiving Water Limitations 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:

- Overall water quality at beaches throughout Ventura County remained among the best in the state.

- Developed a Water Quality Index to distill the over 200 constituents monitoring into an easy to communicate form and continued a comprehensive data analysis effort, aiming to prioritize pollutants of concern in outfall and receiving waters that will in turn prioritize Program activities.

- Provided support funding to Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) for an Environmental Impact Report (EIR) for a single use bag ordinance. This EIR will be available to the Permittees who want to pursue a single use bag ordinance to reduce litter.

- Completion of a Hydromodification Control Plan, including susceptible area mapping, through an open stakeholder process. Continued 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.

- Program update presented to Regional Board including pollutant prioritization, success stories, and challenges.

- Installed Watershed Identification Signs across the county, and made over 7 million impressions through the Public Outreach program. Nineteen percent of those were made in Spanish.

- Participation in the statewide Coastal Cleanup Day Event at 22 different beaches and inland waterways.

- The Stormwater Monitoring Program was able to achieve a 97.1% success rate in meeting program data quality objectives.

- Improved data evaluation and comparison to water quality objectives through a comprehensive review of Basin Plan, California Toxics Rule, and Program's water quality database stored values and programmed calculations. Any misreported information was identified, corrected and reported to the Regional Board. No additional constituents were discovered to cause or contribute to exceedances of water quality criteria.

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

- Integrated Regional Water Management Plan (IRWMP) Participation.

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

1.2 PROGRAM EFFECTIVENESS ASSESSMENT

The 2012/13 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><th colspan="6">Integrated Assessment</th></tr>
<tr><th>Implementation Assessment</th><th colspan="3">Target Audience & Source Assessment</th><th colspan="2">Urban Runoff & Receiving Water Assessment</th></tr>
<tr><th>Outcome Level 1
Stormwater Program Activities</th><th>Outcome Level 2
Knowledge & Awareness</th><th>Outcome Level 3
Behavior (Action)</th><th>Outcome Level 4
Source Reductions</th><th>Outcome Level 5
Runoff Quality & Hydrology</th><th>Outcome Level 6
Receiving Water Conditions</th></tr>
<tr>
<td>§ Facilitation activities
§ Feedback activities
§ Administrative activities</td>
<td>§ Knowledge
§ Awareness
§ Attitudes</td>
<td>§ BMP Implementation
§ Intermediary Behaviors
o Information seeking
o Pollution reporting
o Participation and involvement
o Administrative and procedural behaviors</td>
<td>§ Source pollutant loads
§ Site / source hydrology</td>
<td>§ Urban runoff quality
§ Urban runoff hydrology</td>
<td>§ Receiving water quality
§ Hydromodification impacts
§ Beneficial use protection</td>
</tr>
</table>

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

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:

- 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 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 decrease 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 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 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

2.3.2 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, 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 communicating and implementing Permit requirements, and improving 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, target audiences, and decides on the best methods of outreach to influence a change in behavior. Information is shared and regional message consistency reinforced.

Business Outreach 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 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. This year's focus was on developing the Hydromodification Control Plan.

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 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 by the Permittees that increased attendance and effort in the subcommittees will be rewarded by improvement in staff, resources, and the overall program.

2.3.3 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.

2.3.4 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.

2.3.5 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

Legal counsel statement of necessary legal authority to comply with the Permit through ordinances and/or municipal code modifications? (by July 8, 2012)			
	Yes	*No*	*In Progress*
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection			R

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. The Permittees, led by the City of Moorpark, have been 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. Several of the Permittees have updated their existing ordinances or written entirely new ones. 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 2012/13 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 be able to enforce the Permit was required by July 8, 2012, the beginning of this reporting period.

Table 2-1 Ordinance Adoption Dates

Ordinance Adoption Dates		
Permittee	**Adopted Date**	**Amendment Date**
Camarillo	3/11/1998	12/12/2012
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	6/30/2014
Santa Paula	11/16/1998	2010
Simi Valley	7/2/2012	
Thousand Oaks	10/14/1999	

2.3.6 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 Stormwater Quality Association, 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.

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 2013/14 the estimated costs are about half of what they were a few years earlier, though still significant at $16 million.

Performance Standard 2-3

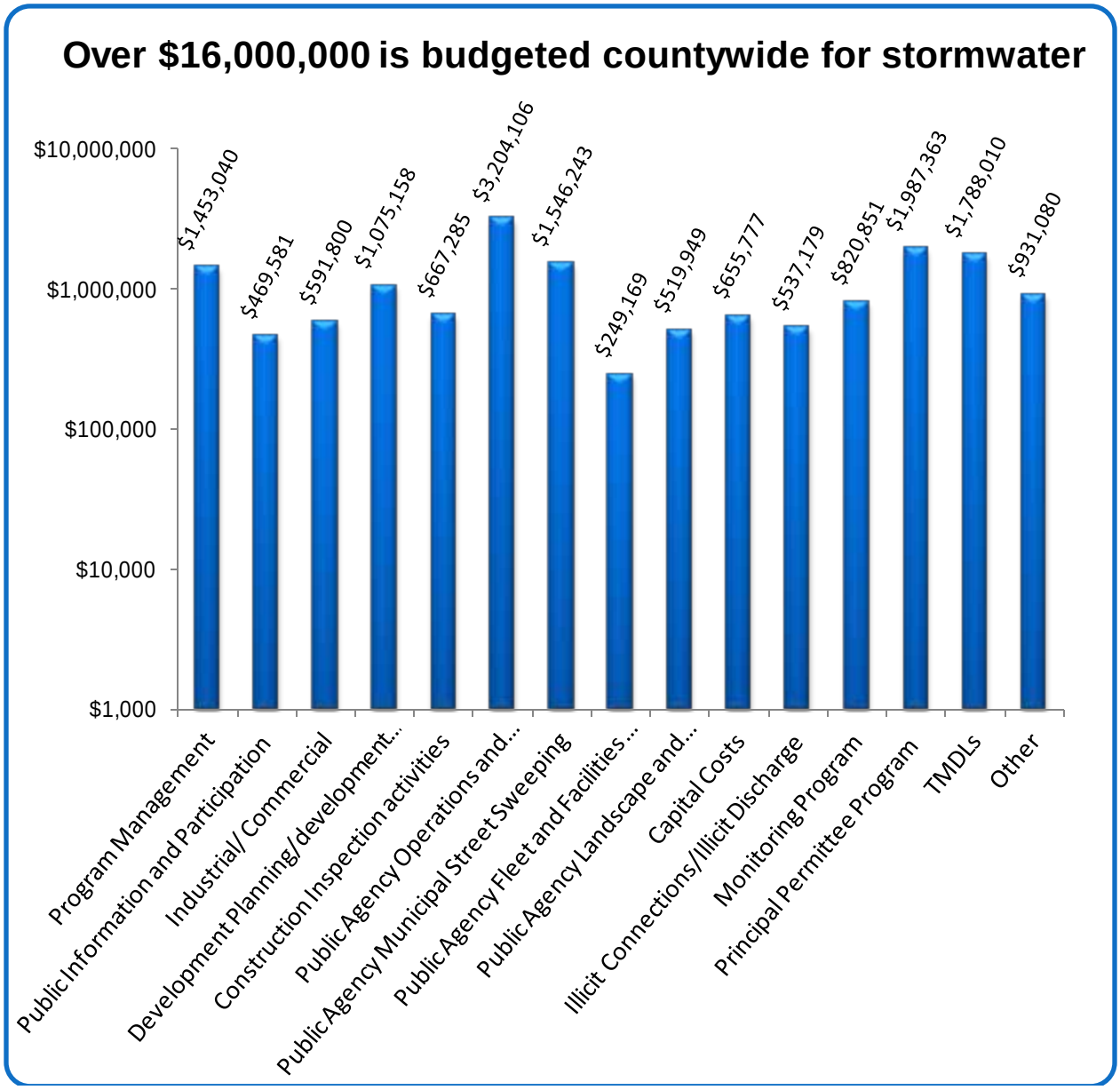
Ensure that its Stormwater Quality and LID Ordinances authorize enforcement of all requirements of the Permit? (by July 8, 2012)			
	Yes	*No*	*In Progress*
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand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

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.

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.

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	$ 225,969	$ 258,076	$ 10,000	$ 67,830	$ 10,000	$ 132,095	$ 25,000	$ 215,000	$ 20,000	$ 124,646	$ 160,000		$ 204,424
III. Public Outreach	$ 20,238	$ 54,076	$ 4,000	$ 3,000	$ 2,000	$ 18,000	$ 2,000	$ 30,000	$ 500	$ 49,605	$ 80,000	$ -	$ 206,162
IV. Industrial/ Commercial	$ 44,953	$ 65,152	$ 5,000	$ 16,200	$ 2,000	$ 185,998	$ 2,000	$ 100,000	$ -	$ 118,497	$ 52,000	$ -	$ -
V. Planning and Land Development	$ 86,472	$ 161,000	$ 5,000	$ 75,000	$ 5,000	$ 91,404	$ 2,500	$ 375,000	$ -	$ 24,734	$ 80,000	$ -	$ 169,048
VI. Construction	$ 83,513	$ 35,480	$ 8,000	$ 75,000	$ 3,500	$ 180,894	$ 3,000	$ 50,000	$ -	$ 173,898	$ 54,000		$ -
VII. Public Agency Activities													
Operations and Maintenance	$ 244,827	$ 70,000	$ 10,000	$ 15,000	$ 12,000	$ 467,809	$ 30,000	$ 320,000	$ 20,000	$ 334,470	$ 180,000	$ 1,500,000	$ -
Municipal Street Sweeping	$ 331,400	$ 122,000	$ 33,000	$ 116,700	$ 48,000	$ 600,000	$ 79,000	$ 40,000	$ 9,000	$ 167,143		N/A	$ -
Fleet and Public Agency Facilities (Corporate Yards)	$ 6,022	*	$ 7,000	$ 16,300	$ 5,500	$ 33,581	$ 2,000	$ 7,000	$ 29,500	$ 12,266	$ 130,000		$ -
Landscape and Recreational Facilities	$ 21,596	**	$ 3,000		$ 3,500	$ 8,179	$ 360,000	$ 40,000	$ -	$ 83,674			$ -
Capital Costs	$ -				$ 10,000	$ 390,000	$ -	$ 120,000	$ 15,000	$ 38,777	$ 82,000		
VIII. Illicit Discharges/ Connections	$ 50,347	$ 64,580	$ 5,000			$ 85,058	$ 2,000	$ 30,000	$ 2,000	$ 238,194	$ 60,000		
Monitoring Program	$ 5,000	*			$ 2,000	$ 29,144		$ -	$ -	$ 16,081		$ -	$ 768,626
Principal Permittee Program	$ 96,700	$ 211,000	$ 6,000	$ 40,000	$ 7,500	$ 164,626	$ 12,000	$ 185,000	$ 22,000	$ 140,000		$ 1,000,000	
TMDLs	$ 92,004	$ 956,978	$ 4,000	$ 34,000	$ 6,000	$ 94,028		$ 66,000	$ -	$ 75,000	$ 220,000	$ 240,000	
Other								$ 10,000	$ 500	$ 71,477		$ 210,000	$ 639,103
Total	$ 1,309,041	$ 1,998,342	$ 100,000	$ 459,030	$ 117,000	$ 2,480,816	$ 519,500	$ 1,588,000	$ 118,500	$ 1,668,462	$ 1,098,000	$ 2,950,000	$ 1,987,363

* Funds for additional Public Agency Activities are allocated in the County's Operations and Maintenance budget, Fleet Public Agency budget, and County's Landscape and recreational Facilities budget.

** Capital costs are included in the County's Capital Project budget.

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 renewed 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		
Permittee	**Population**	**Area (Sq. Mi.)**
Camarillo	65,201	20
County of Ventura	92,063	24
Fillmore	15,000	3
Moorpark	34,421	12
Ojai	8,156	4
Oxnard	200,004	27
Port Hueneme	21,887	5
Ventura	107,514	33
Santa Paula	30,000	5
Simi Valley	126,414	42
Thousand Oaks	128,000	55

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 not only met, but are effective 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's 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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 some agencies may have a separate number for that. 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 (generally much faster). 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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.moorparkca.gov
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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

3.4 Public Outreach Implementation - PO2, PO3

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

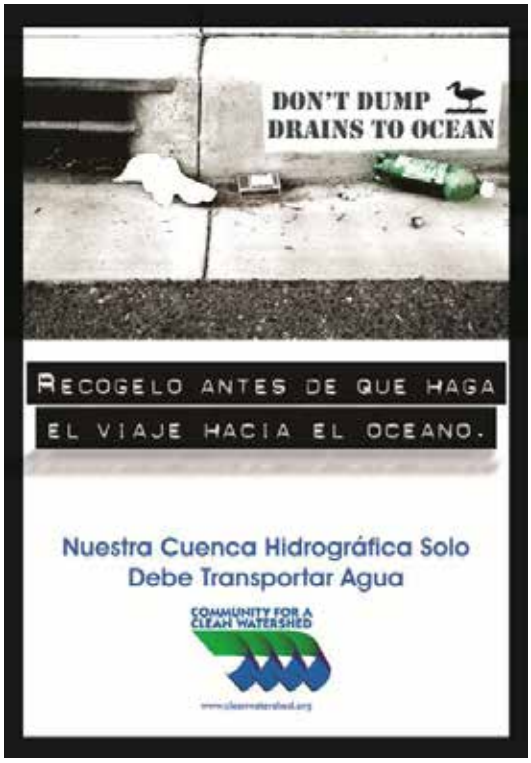
Work with existing local watershed groups or organize watershed Citizen Advisory Groups/Committees to develop effective methods to educate the public about stormwater pollution? (by July 8, 2011)			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	R		

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 19% of the annual media impressions: 1,273,304. (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	R		

Performance Standard 3-6

Conduct a stormwater pollution prevention advertising campaign			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	R		

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.

For the three campaigns in the 2012 /13 year, the Community for a Clean Watershed marketing effort plan achieved a total of 7,792,614 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 2012	Coastal Cleanup	1,629,474		70,000
Fall 2012	Trash	989,007	56,481	159,040
Spring 2013	Beauty/Trash	2,652,795	448,496	421,085
Transit Shelter Overrides Fall/Spring	Trash	1,283,711		623,179
Total Media Plan		**6,554,987**	**504,977**	**1,273,304**
Website (Visitors)		6,863		
Press Releases/Bylines (15)	Various	1,230,764		
Total Impressions		**7,792,614**	**504,977**	**1,273,304**

Due to social media's lack of agreed-upon reporting metrics, Facebook impressions are not included.

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 2012/13 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.

Collaboratively, the Permittees continued to execute a variety of outreach activities. The 2012/13 year's efforts included the following key initiatives, which were created and implemented through theAgency.

Countywide Efforts

For seven years, the ten Permittees and the County have worked together as **Community for a Clean Watershed** to effectively educate Ventura County residents about how their daily habits contribute to the health – or the detriment – of the four watersheds, and coastal areas of Ventura County. Much of the outreach has been in defining the watershed, identifying pollutants of concern and putting forth best practices to protect the local watershed as a part of residents' or business' daily habits. This year, in the eighth year of the program, a strategic decision was made to take a step back and focus on the beauty of Ventura County's watersheds, the goal of which was to instill and/or reinforce the perceived value of the thing we are asking them to protect.

As one of the two region-wide campaigns in fiscal year 2012/13, "Beauty" continues to reinforce stormwater pollution prevention education, working in conjunction with ongoing local Permittee activities. Collectively, the campaigns work toward the following long-term objectives:

- Build and sustain awareness of the term "Watershed"
- Demonstrate the importance of protecting local watersheds
- Develop and cultivate a consistent message
- Be relevant to all of Ventura County and choose media accordingly
- Educate the specified audiences
- Identify pollutants of concern
- Demonstrate positive behavior
- Change negative behavior
- Track attitude and behavior changes
- Adhere to all Permit requirements for outreach

A variety of ongoing outreach activities fulfill various components of the NPDES Permit and target a range of key audiences including:

- Residential
- Retail Businesses

- Commercial Businesses
- Industrial Businesses
- Spanish language support for each of the above audiences
- K-12 Students

Fall 2012: "A Day in the Life" Trash

Continuing focus on trash and the amount accumulated in Ventura County Watersheds in a single year, the fall campaign reinforced the messages in the spring with the ironic, humorous – and eventually incredulous, TV and radio spots titled, "A Day in the Life" of Ventura County's Watersheds. As a charismatic young man 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, and at this point his expression becomes very concerned (knowing what will drop next) and the spot ends.

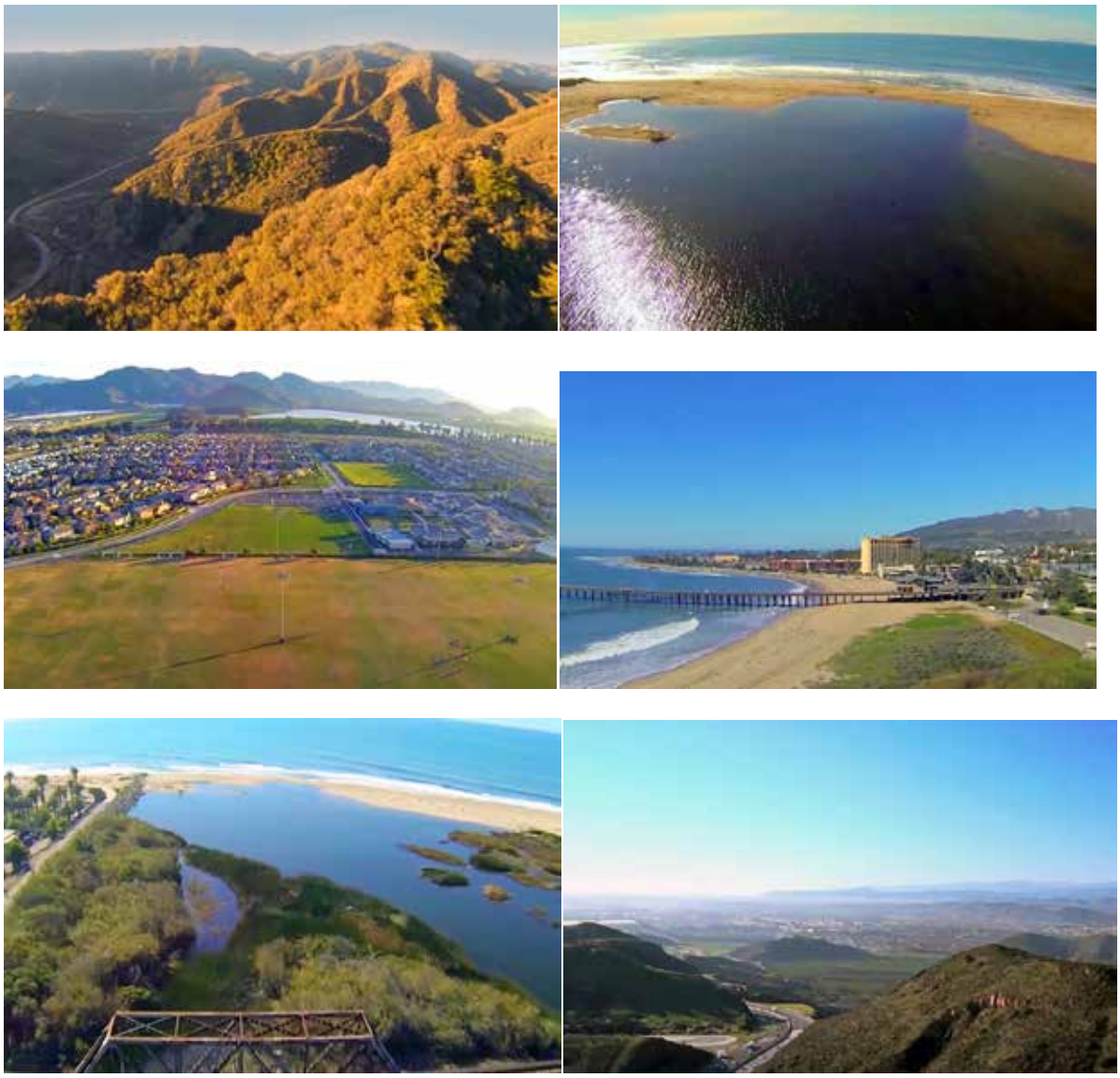
Frames from "A Day in the Life" TV Spot

A Day in the Life Transit Shelter - Outdoor impressions were 2,280,967 (35% of media buy)

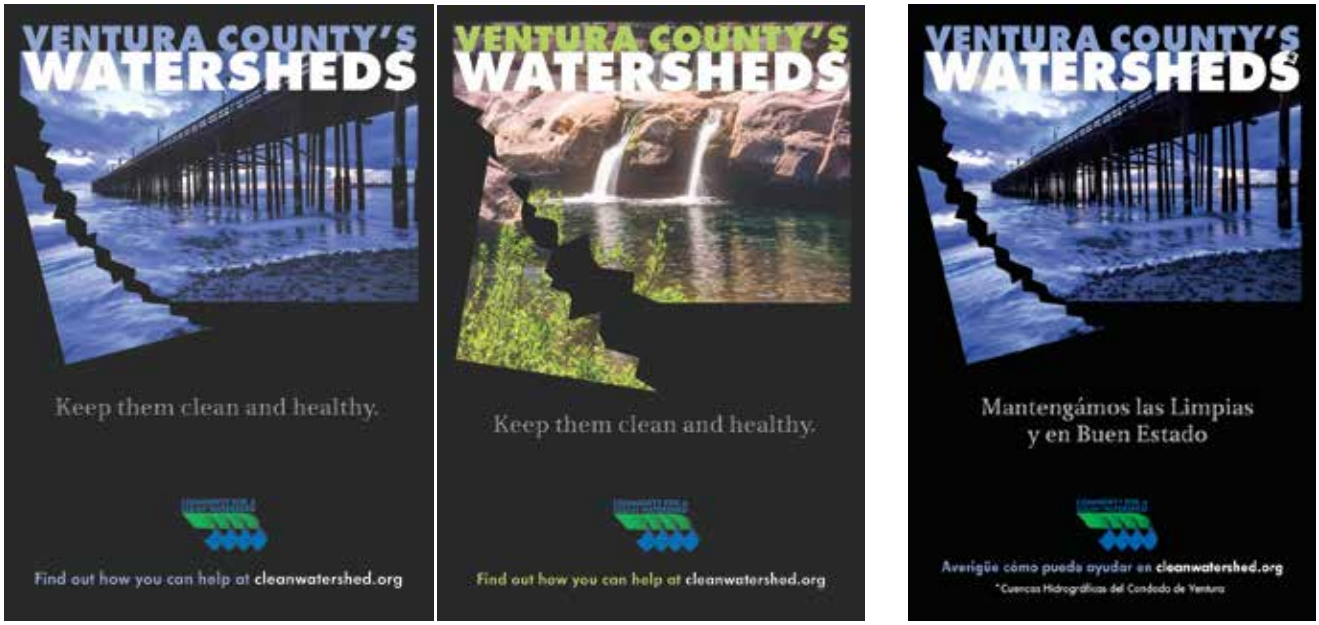
Spring 2013 – "Beauty"

A new awareness campaign, "Beauty," was designed to celebrate the natural beauty of Ventura County, but more importantly, its purpose is to remind residents that we must all do our part to keep our local streams and creeks free from pollution. The campaign seeks to make an emotional connection with residents to provoke a feeling of ownership, so they will feel protective of their environment and more likely to take action. The television and radio commercials remind everyone of the special place in which we live and the need to take a proactive approach to keeping it special--particularly when it comes to our watersheds.

To capture the unique and undeniable beauty of Ventura County – from the mountain tops to the seashore, footage was shot using a quadcopter, a small, remote-controlled, four-engine vehicle. A high definition camera was mounted to the quadcopter with the pilot flying the vehicle using controls and a monitor on the ground. Filming locations included the Los Padres National Forest, Ronald Reagan Presidential Library, Conejo Grade, Camarillo's Village at the Park, the Ventura River and along the beach. The resulting commercial, linked with original music, is powerful and hopefully not only raises emotional involvement, but reaches people who were not touched by the more educational outreach modules, so when we return to outreach about pollutants of concern, their consciousness will have been raised and they will be more apt to respond.



Frames from "Beauty" TV Spot



Beauty Transit Shelters

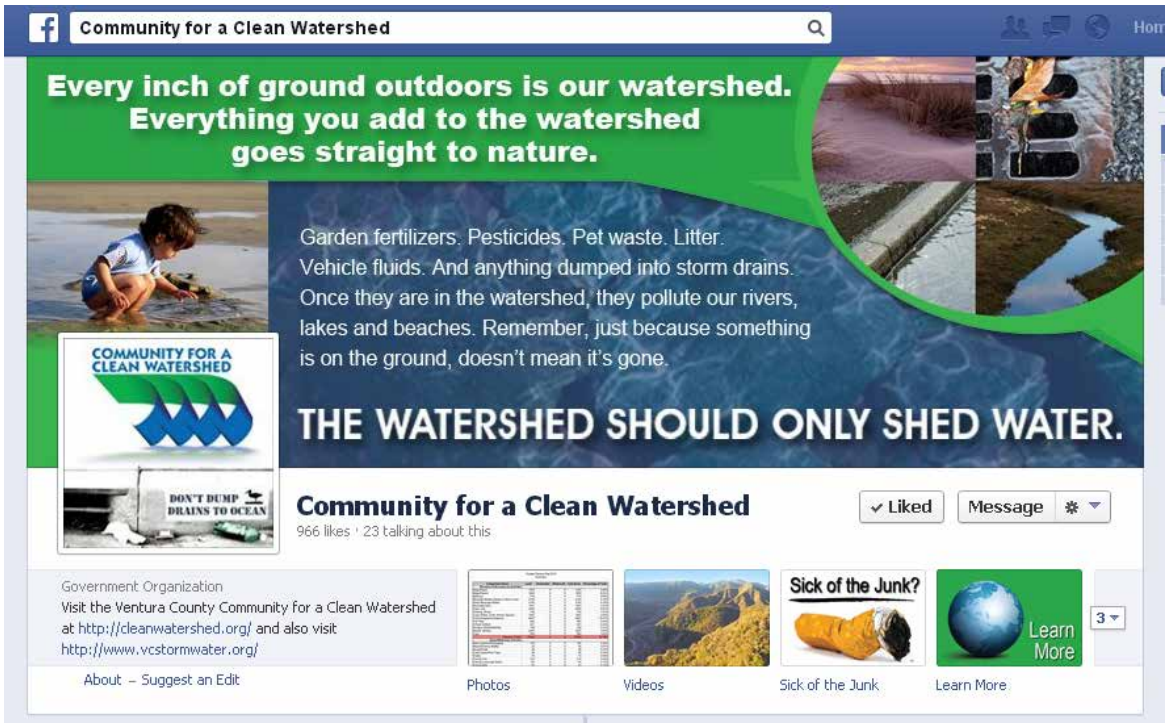
Community for a Clean Watershed Website

To complement the Beauty campaign, the Community for a Clean Watershed website was redesigned and re-launched on February 25, 2013. Originally developed in 2005, the website was out of date both in terms of design and functionality, making it a perfect time to take a fresh look at it, adding increased regionalization and functionality, as well as making it more visually driven.

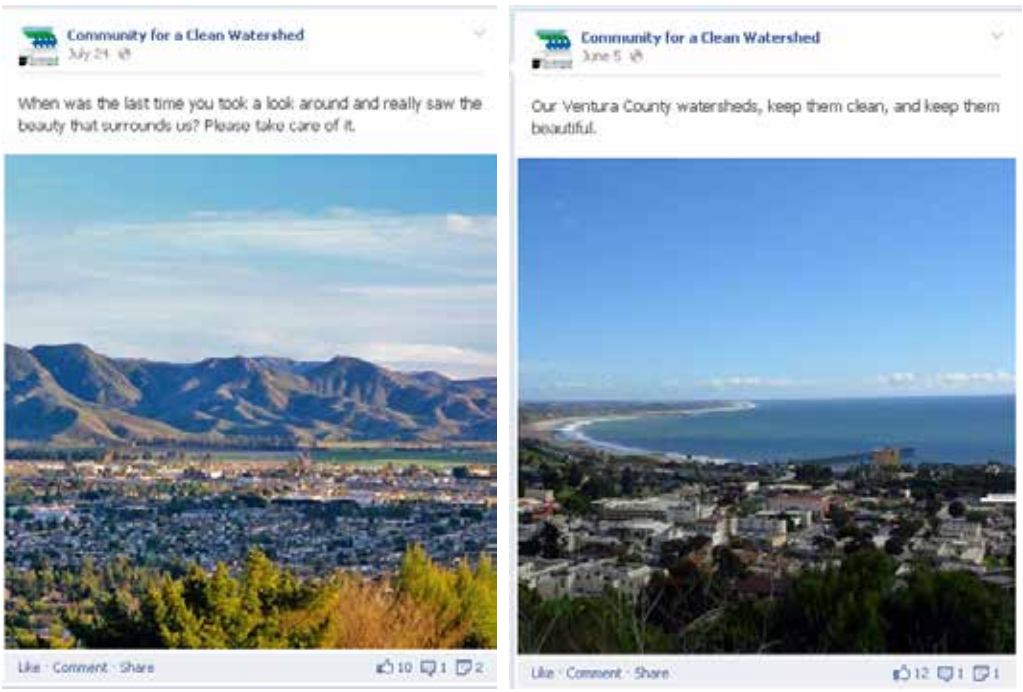
Besides being beautiful, cleanwatershed.org has a myriad of practical information, showing residents simple actions that can make a big difference. They include repairing automobile oil leaks, using biodegradable products for landscaping and car washing, bagging or mulching lawn clippings so they will not wash into nearby storm drains, disposing of pet waste properly, taking unwanted hazardous waste (i.e. oil, anti-freeze, paint, pesticides) to a proper disposal facility and reducing the use of fertilizers, herbicides and pesticides in yards and gardens. An easy-to-read map helps visitors "find their watershed" plus they can download brochures about watershed-friendly car, home and pet care, as well as brochures, posters and best management practices for businesses. A photo gallery reinforces Ventura County's beauty and the site's verbiage invites concern, participation, and action.

Facebook Page

Nearing 1,000 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 concerned about the environment. To maintain awareness of the Watershed between media campaigns, posts are engaging, including photos, information about local events for Earth Day and/or Coastal Clean-up Day, and interesting local facts.



Facebook Timeline Photo



Sample Posts on the Facebook Page

Publicity: Fall 2012 and Spring 2013

In addition to paid media, 15 press releases and bylines ran in the *Ventura County Star* and/or *The Acorn*. Many ran in a Sunday column, "Eye on the Environment." Press Release/Byline impressions based on average circulation of The Star countywide and The Acorn in 3 cities.

- 7/29/12, *Is the water safe to swim*, by Bram Sercu
- 9/9/12, *Coastal Cleanup Day*, by Kelly Hahs
- 10/28/12, *Clean Water Act 40th Anniversary and Coastal Cleanup Day*, by Kelly Hahs
- 8/19/12, *Community Gardening*, by Jessica Craven
- 10/21/12, *Compost Bin & Rain Barrel Truckload Sale*, by Lisa McCullough and Arne Anselm
- 11/25/12, *Pesticides in the Environment*, by Bram Sercu
- 12/2/12, *Recycling Manure: No more horsing around with waste*
- 12/23/12, *Permeable pavement filters first flush pollutants*, by Jason Burke
- 3/22 & 29/13, "Beauty" press release (ran in Camarillo, Moorpark, Simi Acorn)
- 3/24/13, "Ventura County coalition launches "Beauty" campaign to keep streams clean," Cheri Carlson
- 3/31/13, *Community Campaign focuses on Ventura County Watershed Awareness*, by Arne Anselm and Kelly Hahs
- 4/21/13,*What is Gray Water*, by Jim McDonald
- 4/28/13, *We can save more than water*, by Arne Anselm
- 5/26/13, *Can I drink that?*, by Bram Sercu
- 6/23/13, *Draining and Maintaining your Swimming Pool* by Sean Kroes and Bob Carson

Media Outreach Strategy

A media mix which crosses traditional and social media reaches each target audience in Ventura County, carefully ensuring coverage of both the east and west parts of the county while also touching Hispanic residents in Spanish media. In the Spring, adult and youth campaigns were scheduled to overlap in order to amplify the total share of voice within the 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 2013 outreach efforts, both as a Page and utilizing Facebook ads geographically targeted in Ventura County.

For the three campaigns in the 2012/2013 year, the Community for a Clean Watershed marketing effort plan achieved a total of 7,792,614 gross impressions, as follows:

Youth Outreach

In the Permit year, the Community for a Clean Watershed's efforts towards youth continued, but with less emphasis, given the dramatic results in terms of increased understanding and behavior change tracked in the previous youth survey. It was believed that although it was necessary to go beyond the basic Permit requirements to make a measureable impact, (50% of all Ventura County school children (K-12) every two years or 75,000 targeted impressions), that it was possible to maintain our results without such significant over-delivery. A spring cable television and radio youth campaign prior to Earth Day generated just under 500,000 impressions as the Community for a Clean Watershed continues to speak to this important audience.

Spanish Outreach

To reach the significant Spanish speaking community in Ventura County, elements of each campaign were created in Spanish, including transit shelters and radio commercials. Spanish language advertising accounted for 19% of the annual media impressions: 1,273,304.

Community for a Clean Watershed Website

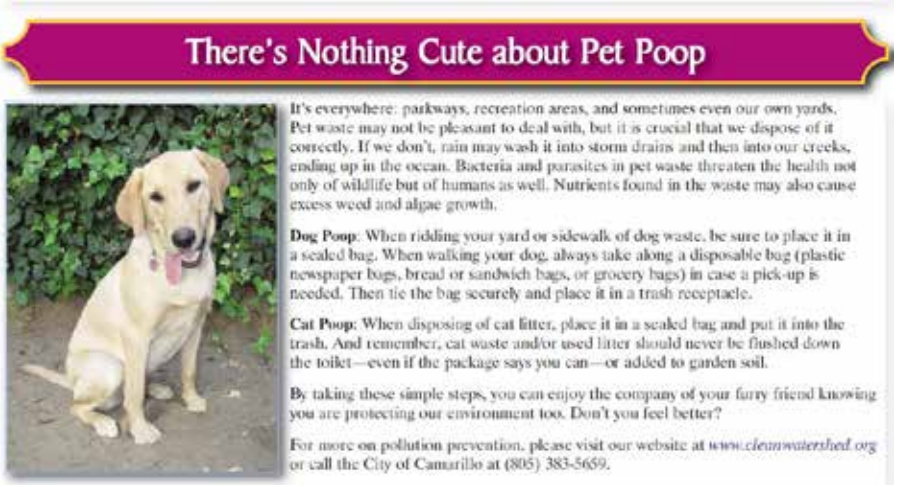
Unique visitors to the website were up 4.5% over last year with 4,055 people coming to the site over 6,863 visits – meaning that 2,808 visits were from people who had been to the site previously. Page visits, at an average of 3.14 pages per visit, were up 57% from last year's 2.0 pages per visit. While it will take some time to judge the effectiveness of the new website, this preliminary data would suggest that people are exhibiting an increased interest in the new site – with both repeat visits and multiple pages viewed.

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	R		

Permittee Individual 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 6.1 million additional impressions. Below are some examples of these efforts:



There's Nothing Cute about Pet Poop

It's everywhere: parkways, recreation areas, and sometimes even our own yards. Pet waste may not be pleasant to deal with, but it is crucial that we dispose of it correctly. If we don't, rain may wash it into storm drains and then into our creeks, ending up in the ocean. Bacteria and parasites in pet waste threaten the health not only of wildlife but of humans as well. Nutrients found in the waste may also cause excess weed and algae growth.

Dog Poop: When ridding your yard or sidewalk of dog waste, be sure to place it in a sealed bag. When walking your dog, always take along a disposable bag (plastic newspaper bags, bread or sandwich bags, or grocery bags) in case a pick-up is needed. Then tie the bag securely and place it in a trash receptacle.

Cat Poop: When disposing of cat litter, place it in a sealed bag and put it into the trash. And remember, cat waste and/or used litter should never be flushed down the toilet—even if the package says you can—or added to garden soil.

By taking these simple steps, you can enjoy the company of your furry friend knowing you are protecting our environment too. Don't you feel better?

For more on pollution prevention, please visit our website at www.cleanwatershed.org or call the City of Camarillo at (805) 383-5659.

Camarillo's City Scene

Camarillo

Contacts:	Event:
28,000	City Scene July/August: "2012 Coastal Cleanup Day Save The Date"
50	Camp Helping Hands Enviroscape Presentation and F-Canyon Cleanup
32,400	City Scene TV: "Keeping CA Water Clean- Addressing Stormwater" video (3 month airing)
28,000	City Scene September/October: "Stop Pollutants in Their Tracks"
100	Coastal Cleanup Day 2012 City Council Presentation
20,000	Coastal Cleanup Day Utility Bill Inserts- Coastal Cleanup Day and Watershed info
28,000	City Scene November/December: "Thank You 2012 Coastal Cleanup Day Volunteers"
10,800	City Scene TV: "The Trash in Our Water" video (1 month airing)
130	Post-Construction Treatment Device Mailout for 88 Private Devices
355	Business Program Letter Re: Stormwater Permit Inspection & Related Fee
40	Car Wash Flyer Outreach to Churches and Schools
28,000	City Scene January/February: "Nothing Cute About Pet Poop"
253	Flyer sent to Commercial Businesses Re: Chamber of Commerce Meeting
54	Meeting flyer and Response to Request for Exemption Letter Mai lout to Commercial
22	SW Permit Inspection Notice/Fee Letter/Meeting Info sent to Industrial Permit Holders
31	SW Quality Commercial/Industrial Program Meeting
31	2nd Notice sent to Post-Construction Treatment Device Owners
100	Earth Day 2013 Event
136	La Mariposa Earth Day: Enviroscape Demonstration
300	Camarillo High School Earth Day (enviroscape displayed by recycling club students)
28,000	City Scene March/April: "Do This Before You Drain Your Pool"
28,000	City Scene May/June: "Help Protect Calleguas Creek" (Trash article)
28,000	City Scene May/June: "Please… Scoop That Poop!"
2,700	City Scene TV: Beauty Watershed video (1 week airing)

County of Ventura

On July 16, 2012, county staff provided stormwater and pollution prevention outreach at Camp Helping Hands (http://www.camphelpinghands.com/), where approximately 40 students were in attendance.

On Sunday December 23, 2012, County staff published an article in the Ventura County Star regarding first flush stormwater pollution and permeable pavement retrofits that residents can do to reduce runoff pollution (titled "Permeable surfaces allow rain, runoff to drain into gravel"). There are over 103,730 subscribers to the Sunday print version of the star, and all are assumed as impressions by Ventura County Star advertising data.

During the May 5, 2013 Oak Park "Big Sunday" community improvement event, the Oak Park Unified School District coordinated 31 community volunteers who repainted 269 "Drains to Creek" labels on storm drains in Oak Park.

On June 15, 2013, the County hosted an Ocean Friendly Gardens workshop at the Hollywood Beach Elementary School, design to reduce stormwater pollution and increase residential low impact development (LID) to increase onsite rainwater retention and reduce irrigation runoff. This workshop targeted the Channel Islands Harbor community, as required by the Channels Islands Harbor Bacteria TMDL work plan. Approximately 10 people attended.

During the month of October, the County utilized a billboard along the 101 freeway (near the Del Norte exit) to provide a trash reduction message encouraging the proper disposal of plastic and reduction of plastic waste in oceans and waterways. The billboard advertising agency notes that 97,000 people per day travel on the 101 at this segment, and billed the advertising rates at an assumption of 97,000 impressions per day. This sign remained in place for one month.

Rain Barrel Sale Flyer

Moorpark

The City of Moorpark participates in Coastal Cleanup Day. The event was on September 15, 2012 during Permit year 2012/13. Forty volunteers covered approximately six miles of the Arroyo Simi, collecting 300 pounds of trash and 30 pounds of recyclables.

Public information on stormwater protection is also provided during Moorpark Country Days. Country Days was held on October 6, 2012. An estimated 4,000 people attended the event.

The City offers free hazardous waste collection events to residents of Moorpark. In Permit year 2012/13, 347 households used the service (an increase of 20% compared to Permit year 2011/12).

Cover of LID Guidance Brochure from the County and Watershed Protection District

Mass mailing inlcudes the City's quarterly newsletter that went to approximately 13,200 households. In Permit year 12/13, the City did NPDES messages in 3 quarters. NPDES messages were also mailed in six solid waste bill inserts to 8,008 households each time.

Ojai

Distribute Stormwater at Public and Planning Counters. Booth at Ojai Day distributing same brochures and providing general information. City website promotes NPDES/Stormwater BMP's. Future: Advertisement in local paper 3x's/year. Provide brochures to OUSD and training.

Oxnard

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 recieves 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 Clean Up Day at the Ormond Beach Wetlands and Silverstrand Beach. The City of Oxnard Education and Outreach Specialists estimate that about 19,772 contacts were made through the Building Block, Shows that Teach: "All That Trash" recycling, hazardous waste and Building Block Entertainment, Shows that Teach:Water Conservation. Ventura Coast Keeper (VCK) is a Non Governmental Organization whose mission is to protect, preserve, and restore the ecological integrity and water quality of Ventura County's inland waterbodies, coastal waters, and watersheds. VCK has established a website to educate the community and provide a vehicle for organizing volunteers for activities such as storm water monitoring and trash cleanups. VCK has organized and conducted several cleanup events in the Oxnard J Street Drain and Ormond Beach Wetlands There has been a noticeable increase in the number of contacts made via print due to the increase in Utility Billing Inserts for both the "Cease the Grease Program" and the "Christmas Tree Recycling Program". The number of outreach contacts for School aged children has increased because the City gave more School Presentations for both Recycling and Water Conservation.

The City of Oxnard has an active Business Assistance Program. Technical Services Program (TSP) staff distribute educational materials and BMP guidelines during routine inspections of commercial facilities, automotive facilities and food service establishments. In addition, staff also provide verbal direction and guidance regarding storm water compliance during inspections.

Port Hueneme

Citizens perform random trash pick-up along our greenbelt and beach pathways. We also have a local Filipino group that performs a trash removal event along Hueneme Beach. We also have stormwater quality available to the public at our annual Beach Festival as well as at the Oxnard Harbor District Banana Festival.

Businesses are monitored through the business licensing program. Outreach and education materials are available at City Hall and as part of the permit application process.

Santa Paula

City contributed to MS4 Public Outreach Program; Santa Paula Beautiful; litter cleanup events; storm drain signage; church/service group events; Boy Scouts; California Conservation Corps

Simi Valley

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 109,985 pounds of hazardous waste was collected from the residents of Simi Valley. Stormwater informational brochures were handed out to each of the 958 participants at the events. Stormwater demonstrations were given using an Enviroscape to approximately 300 adults and children at the Moorpark College Environmental and Multicultural Day, Living Green Expo, and Vista Elementary's Earth Day. The City had a staffed booth and informational brochures were handed out at the City's Street Fair. The City's Environmental Compliance Inspectors took the time to educate residents and businesses during 221 compliance responses. City staff issued 178 Pool Discharge Encroachment permits, handing out our Swimming Pool Maintenance BMP brochures with each encroachment permit. The Swimming Pool Maintenance brochures were also given out with Building and Safety permits for new pools.

Thousand Oaks

Bark-in-the-Park, 10/13/12—Poster discussion about bacterial contamination in runoff given to about 400 attendees; 40 impressions)

Public Works Week—May 22-23, 2012; Urban runoff demonstration was given to 666 students and 71 adults

Los Cerritos Middle School Urban runoff demonstration,11/16/12—155, 7th-grade students participated

Arbor Earth Day, 4/13/13—Slide show demonstrating landscapes with low runoff potential and surface water quality issues to net 300 impressions (10% of approximate 3,000 attendees).

Amgen Earth Day Fair, 4/19/13—Slide show demonstrating landscapes with low runoff potential and surface water quality issues to net 250 impressions (10% of approximate 2,500 attendees).

Trail Education Days, 4/10/13—21 students were given a tour of a wilderness area and a discussion of the possible water quality impacts when suburban and open space land uses are adjacent to one another.

Volunteer Trash Removal, 5/4/13—Eight participants removed trash to aid a trash TMDL for Reach 2 of Lindero Creek.

Coastal Cleanup Day 2012— 9/15/12—Volunteers (257) removed 304 pounds of trash and 132 pounds of recyclable materials from 3.1 miles of channels.

Trash Reduction Programs 2012/13—Freeway Ramp and Interchange Cleanup-—431 bags, approximately 3.23 tons of trash were removed; Neighborhood Cleanup Program—44 events collected a total of 160.14 tons of trash and 35.53 tons of green waste from approximately 6,300 residents; Simi Valley Landfill Day—83 tons of trash, 18 tons of green waste,11 tons of concrete and 80 tons of construction and demolition materials (C&D) were received; Free Simi Valley Landfill Day—Vouchers for free disposal were given for May 4-18 allowing 262 residents to dispose of 49.03 tons trash, 19.67 tons of green waste, 68.70 tons C&D, 25.97 tons of concrete, 19 tires, and 2 appliances.

Household Hazardous Waste (HHW) Program, 2012/13—11 events were held where 413,511 pounds of HHW were collected from 4,160 residents and 630 residents exchanged 23,172 pounds were for reuse.

Thousand Oaks maintains a business outreach program whereby inspectors provide literature and guidance that illustrates proper wastewater disposal methods and discussed operational practices that are designed to prevent stormwater system contamination. In this fiscal year, 46 auto repair shops, 6 carwash/mobile detailing, 1 carpet cleaner, and 15 restaurants were educated by these methods.

Ventura

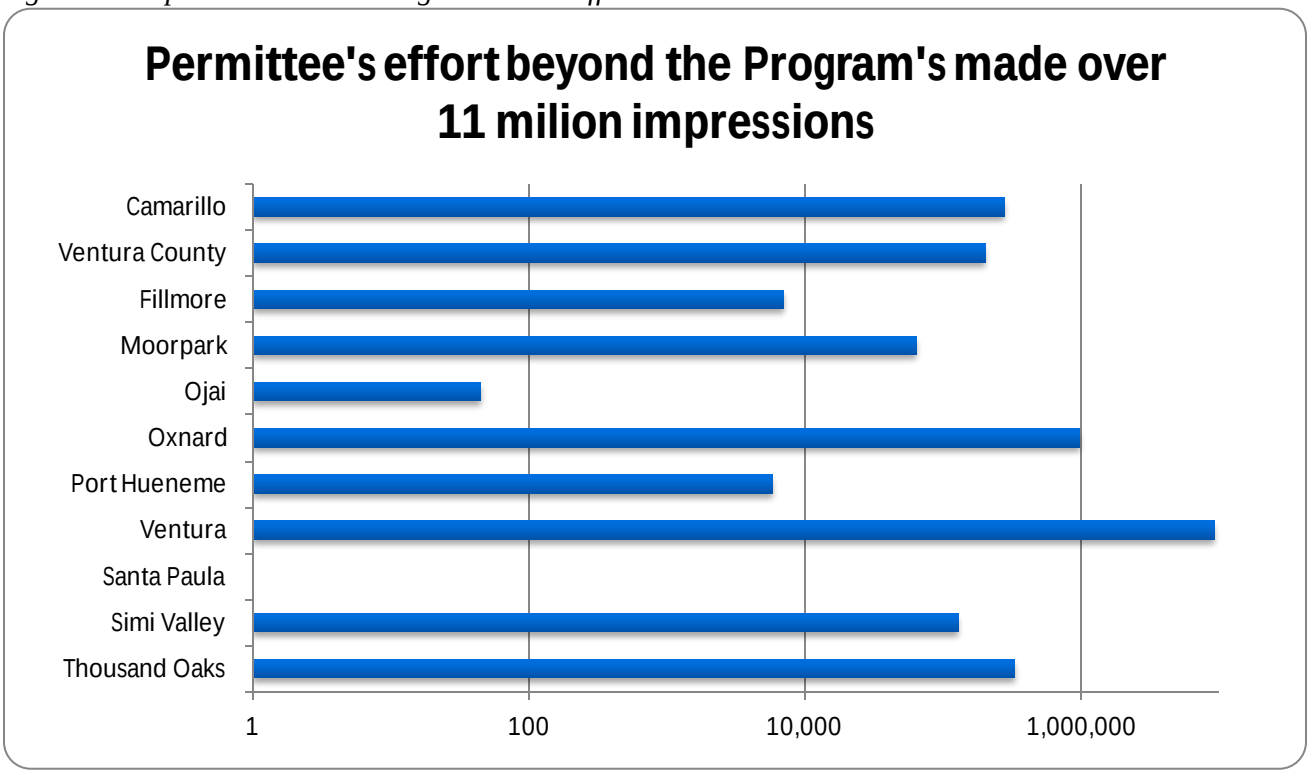
The City of Ventura has a broad based volunteer program with a mission to preserve our natural resources. The following volunteer events included: (31) Misc. community park clean ups with 525 volunteers working to remove litter and trash from public areas. Earthday (3) sites with 811 volunteers; Martin Luther King Day Ventura River cleanup with 564 volunteers; Trashathon held at (16) sites with 278 volunteers, Coastal Clean Up held at (5) designated sites with 995 volunteers. In addition, City staff participate in various community events offering educational information. Some of these events include the following: Home and Garden Show, Eco-Fest, Summerfest, Hillside Music Festival, Botanical

Garden, and 4th of July Street Fair. City staff continue to work with Surfrider to promote "Ocean Friendly Gardens" including the proper use of fertilizer, herbicide, pesticide, and water.

This year we ramped up our stormwater pollution prevention outreach in a variety of ways. We continued our use of local billboards to advertise stormwater pollution prevention best management practices which targets residential useage. In addition, we started advertising stormwater pollution prevention best management practices in movie theater ads and through cable television advertising. We have received positive feedback for this new advertising media and the message it conveys. We continue to have outreach posters in all of our bus stop shelters and extensive outreach through social media outlets. The Environmental Sustainability Division continues to offer free environmental education programs for grades Kindergarten through 12th. In 2012, 158 presentations were made to 7686 students and teachers. These presentations are standards-based and approved by the Ventura Unified School District Curriculum Department. The main program “Where Does It Go?” explores where our natural resources come from and what happens to those products once we dispose of them, including what happens to litter and other wastes that end up in the stormdrain. The presentation is interactive and hands-on focusing on what students can do to protect the Earth, i.e. reuse, recycle, conserve resources and pick up litter. The “What’s in Your Watershed?” presentation includes rainwater as it passes through our communities. This is an interactive presentation utilizing the Enviro-Scape Stormwater Education Model. The City partners with Smith Pipe and Supply to furnish rain barrels at a discounted price of 50% of the cost to residents. This year 69 residents took advantage of this discount.

Creek cleanups both educate and remove trash

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.

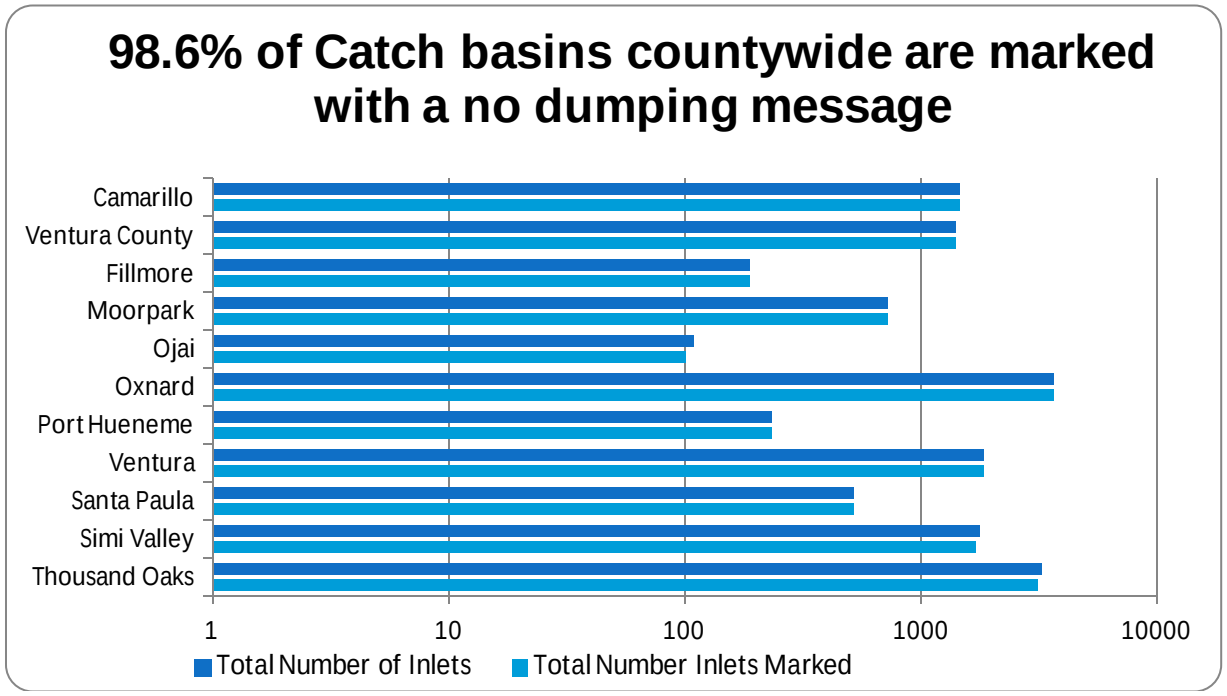
Performance Standard 3-8

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

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.

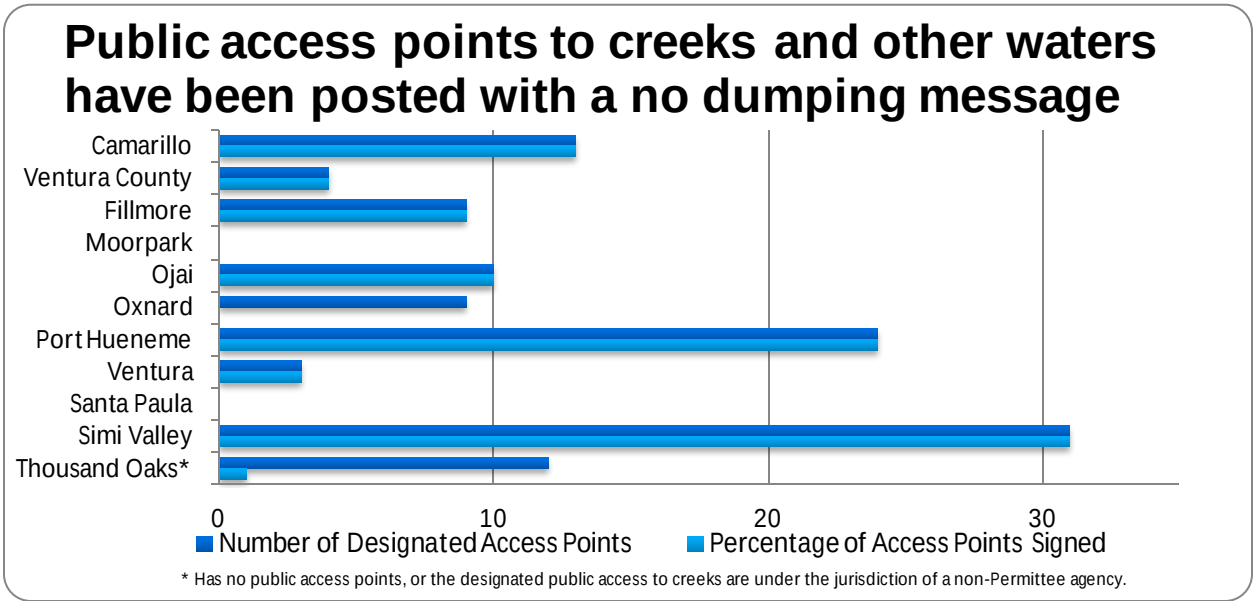
Figure 3-2 Catch Basin Labeling



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 a Permittee 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)

This requirement was fulfilled in June of 2011, as was reported in the 2010/2011 Annual Report. The Permittees distributed stormwater pollution prevention public education materials to automotive parts stores, home improvement centers/lumber yards/hardware stores, and pet shops/feed stores located in the.

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

Retail Partnership Brochures

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

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

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	R		

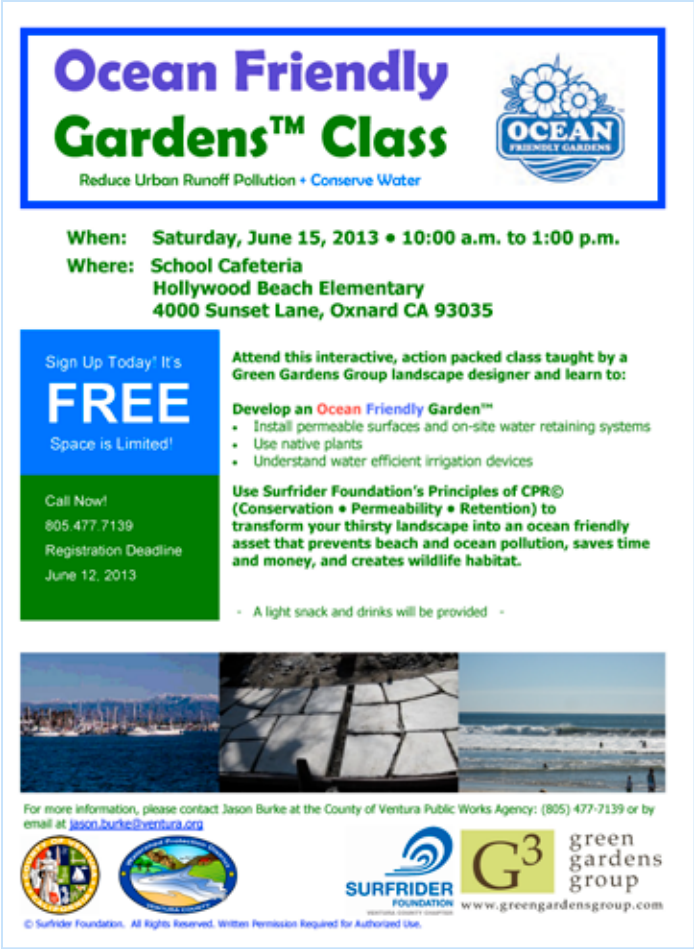
The Countywide Stormwater Web Site (***www.vcstormwater.org***) is periodically updated to include pollutant-specific educational materials for businesses and do-it-yourself homeowners. Facts sheets have been developed over the life of the program and include educational materials on the proper disposal, 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 28th annual California Coastal Cleanup Day was held this year on September 15, 2012. Over 65,500 volunteers turned out across California to help pick up trash and prevent it from spreading in our coastal and inland waterways. Statewide, the volunteers



Flyer Promoting an Ocean Friendly Gardens Class

picked up more than 769,000 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 at the event. The success of the campaign continued in 2012, as volunteers pick up trash and become more aware of the trash they are generating, its proper disposal, and the effect it has on stormwater quality and trash hauling. The California Coastal Commission oversees the California Coastal Cleanup Day and provides some advertising materials and assistance as needed.

At Ventura County's 2012 Coastal Cleanup Day, 3,346 volunteers at 20 sites countywide collected 9,077 pounds of trash and 1,893 pounds of recyclables, and covered a distance of 38 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.

Coastal Cleanup Day had 3,346 volunteers covering a distance of 38 miles at 20 sites countywide and collected 9,077 pounds of trash, and 1,893 pounds of recyclables.

Performance Standard 3-10

Collectively organize events targeted to residents and population subgroups			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	R		

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.

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 Annual Report for Permit Year 2011/2012 describes in detail how this requirement was met. While the Program continues the data are not repeated here. The requirement is that 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 the required 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 businesses 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

Youth Residential Panel Survey – May 2013

Annual research surveys are conducted to measure awareness, perceptions, and actions taken by Ventura County residents, alternating years of research to adult residents and K-12 youth. In addition to measuring changes in attitudes and behaviors related to watershed best practices, the research gives insights about whether outreach messaging is effective. The following summarizes the 2013 Youth Research Survey, which is the third youth study survey since outreach started in 2010. A "baseline" survey was conducted in 2009 and continues to be the benchmark for change.

Methodology

- A web survey was used as the method of data collection.
- There were 30 completed surveys from each of the cities of Thousand Oaks, Simi Valley, Oxnard, Ventura, Moorpark, Camarillo, Santa Paula, Port Hueneme, Fillmore, Ojai, and Unincorporated areas, including Somis, Lake Piru, Saticoy, El Rio, Hidden Valley, Meiners Oaks, Mira Monte, Oak Park, and Oak View.

Trends that remained consistent between 2010 & 2013

Highlights

- Overwhelming majority (84%) would act when a friend littered as well as picking up litter if they saw it on the ground (86%) and understood they could protect the watershed by picking up trash (80%).
- One-quarter (26%) participated in Coastal Clean-up Day.
- Over one-third (36%) are members of an organization or club focused on the environment.
- Two-thirds (63%) knew it's everybody's job to keep the environment clean; however this has been trending down since 2009 (88%).

- Sizeable majority understood that pollutants in their yard such as Styrofoam cups (74%) and that pesticides (65%) could end up at the beach and hurt animals or fish miles away.

Trends that changed between 2010 and 2013

Highlights

- Although 75% understand watershed characteristics (consistent with 2009), a little over half agreed it included their house and yard, down from 2010 (70%).

- Recycling overall is down dramatically compared to 2010: from 93% to 58% in 2013.

    - **Insight:** It may be that the evolution of recycling by choice to recycling by requirement has distanced youth awareness of the activity. It's automatic.

- Where environmental information is obtained has shifted away from family members and more to the schools. Top three resources: school (42%), family (23%), TV (16%)

- Awareness of the impact of certain pollutants improved significantly between 2010 and 2013:

    - Cigarette butts (71% vs. 57%)

    - Pesticides (48% vs. 37%)

- Over three-quarters (78%) are aware it's not okay to drop trash in gutters (down from 87% in 2010). There was a corresponding increase to 26% from 13% who indicated it was okay to throw 'any kind of trash' in the gutter.

    - **Insight:** The signs on storms drains for some Permittees have evolved from large spray-painted "don't dump" signs easily visible from the street, to small (but longer lasting) medallions placed above the drain. It would appear that outreach value of the change has had an impact.

Awareness of Watershed Protection Outreach

Highlights

- One-third (33%) recall seeing or hearing watershed protection outreach on an unaided basis.

- Over three-quarters (79%) recall seeing or hearing watershed protection outreach on an aided basis.

- Television outreach for "A Day in the Life" (35%) and "Beauty" (33%) outdoor signs (30 to 36%) had the highest recall.

Demographics

Highlights

- Kids 5-7: More likely to get information from their family than school

- Kids 5-9: Least likely to recall seeing curb signs and less aware of pesticide danger
- Kids <9: More likely to say they pick-up trash themselves
- Kids 8-12: Less like to perceive the most toxic items as "very polluting"
- Kids 10-12: Greatest recall of specific advertising regardless of medium
- Kids 16-18: Greater awareness of the terms "watershed" and "Stormwater Pollution"
- The older the youth, the more likely to:
    - know it's not okay to drop trash in the gutter
    - be aware of the importance of water to society
    - be cynical regarding the cleanliness of our beaches

Insights

- Youth are overwhelmingly aware of Earth Day, (88%), but they are not making the connection between the event and everyday living and lifestyle choices.
- Participation in what youth identify as 'environmental clubs' is increasing.
- Advertising recall is high and television recall for watershed messaging is strong.

Opportunity

- Intensify education to youth about concepts surrounding watershed and personal responsibility.
- Prioritize outreach messaging to focus educational efforts on primary watershed threats.
- Continue to use imagery and messaging to connect with youth via relevant paid media channels.
- Consider implementing increased levels of outreach similar to previous years, with a weighted focus targeting K-12.

Summary of Effectiveness

In its eighth year of developing educational public outreach campaigns, brochures, posters, a website and an active Facebook presence, the Community for a Clean Watershed program added a new "empathetic" strategy and reminded residents to look around them at the beauty of Ventura County, its watersheds and the importance of protecting that beauty. The "big picture" television, radio and outdoor outreach directed people to the website, where they could learn how to take action on issues which impact the health of Ventura County's watersheds. This new tool is not intended to take the place of the pollutant-specific campaigns, rather to connect more deeply with those who already were being reached – and perhaps to connect with new residents who could not hear the other messaging. Together, these elements work to raise the value of what we are asking them to protect.

- Developed and implemented Beauty campaign television, radio, and transit shelters.

- Re-designed, revamped and revitalized the Community for a Clean Watershed website, incorporating outreach materials, downloadable brochures, videos and links for homeowners, businesses, and educators to take positive steps on their own.

- Maintained a consistent presence to youth.

- Continued and embellished consistent communications with our Community for a Clean Watershed Facebook community.

- Explored additional local media options and continued to push for additional media at no charge, literally doubling paid impressions.

Performance Standard 3-11

Develop and implement a behavioral change assessment strategy based on current sociological data and studies to determine whether the Public Outreach Program is			
	Yes	No	In Progress
Ventura Countywide Stormwater Quality Program	R		

3.5.2 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 Spanish language community in Ventura County via Spanish language advertising in the media. In 2012/13, Spanish language advertising accounted for approximately 19% of the annual media impressions.
- Storm Drain Inlet Markers and Signage – The Permittees have labeled or marked 98.6% 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 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 2012/2013, the Permittees conducted a total of three campaigns (Green Waste and Youth, and Trash) for an estimated 7.79 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 provided outreach 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 3,346 volunteers collected trash at 20 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, along with the individual efforts of the Permittees in 2012/13, an estimated total of over 18 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 500,000 media impressions made on children 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. In addition, the Facebook page has a sizeable percentage of young fans, allowing for a consistent message to be delivered to youth. **(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)**

3.5.3 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 (MEP). 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

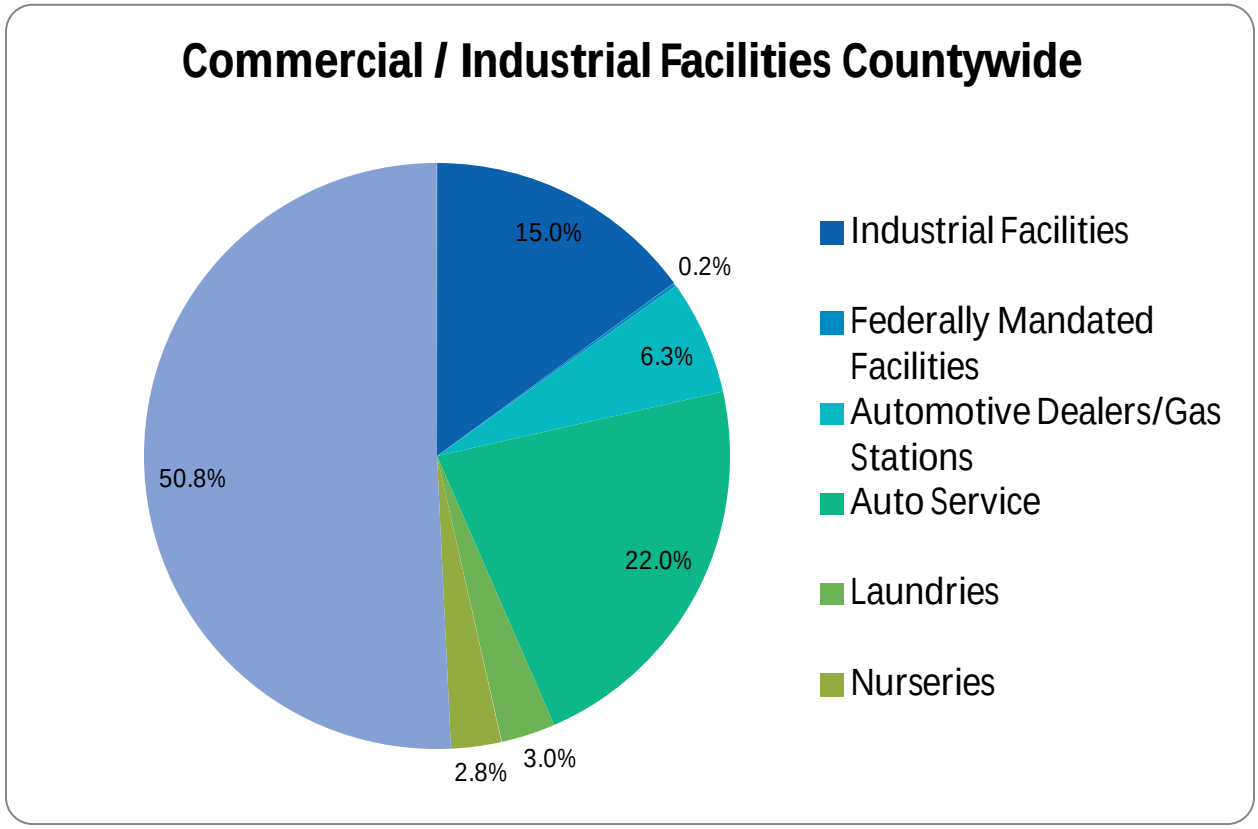
As required by the Permit, the Permittees maintain an inventory of industrial and commercial facilities within their jurisdictions, including those covered under the state Industrial General Permit. This inventory identifies the type of business, the watershed it is located in, and inspections and enforcement 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 many 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 snapshot in time and is continually updated as information becomes available. The current development of inventory for 2012/13 is summarized in the following Tables.

Performance Standard 4-1

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

Figure 4-1 Commercial/Industrial Facilities Inventory



Materials stored with secondary containment

Figure 4-2 Commercial/Industrial Facilities by Permittee

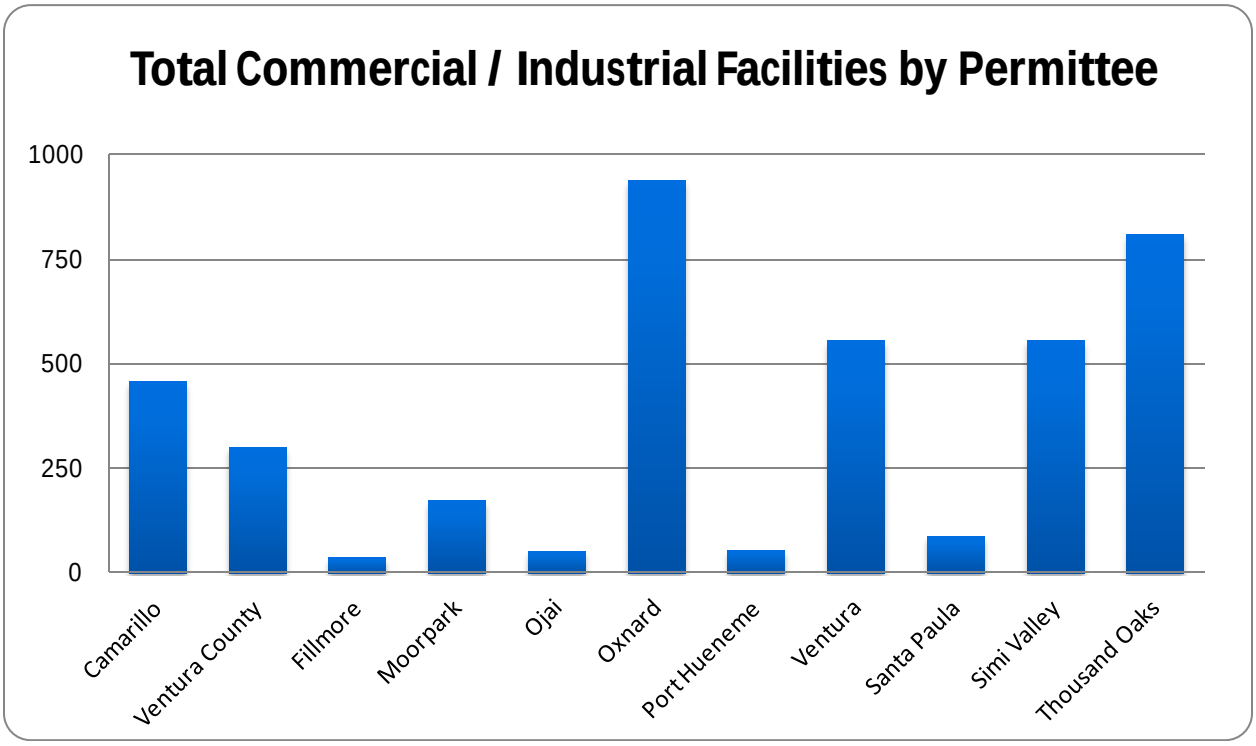
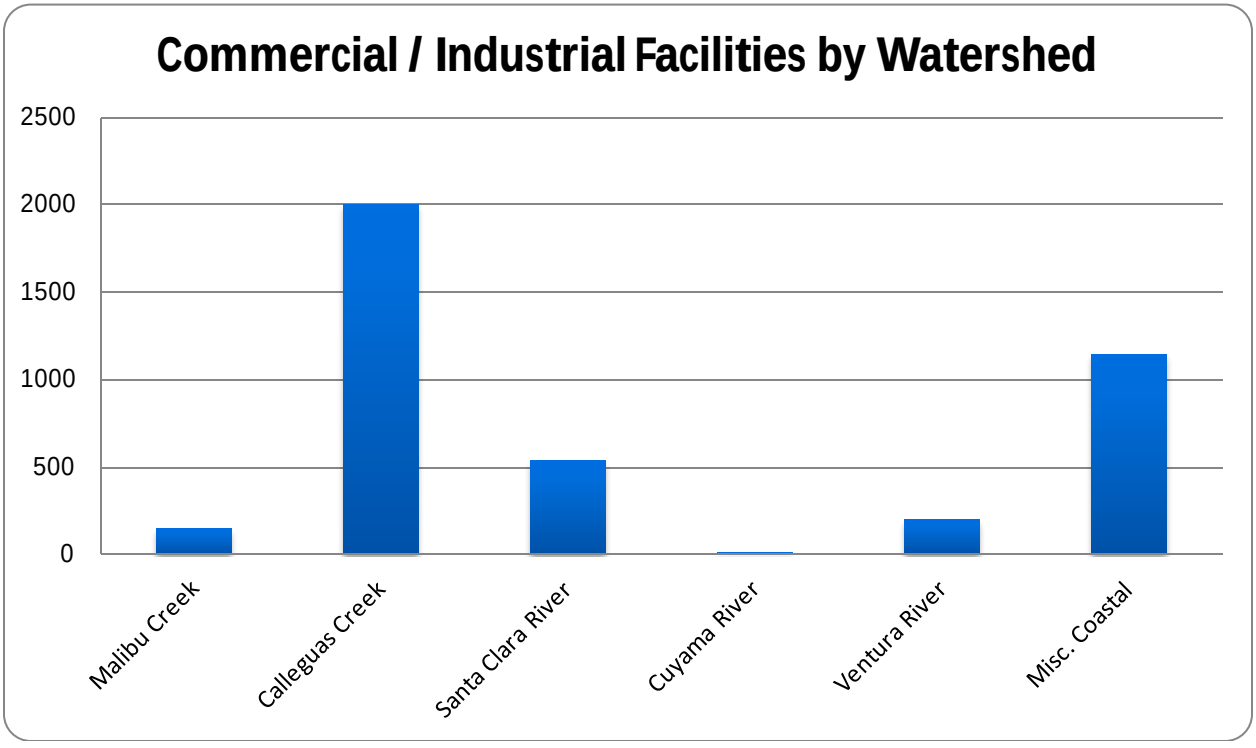


Figure 4-3 Commercial Industrial Facilities by Watershed



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. The status of the industrial commercial inspection program through the end of the reporting period is represented in the following tables.

Figure 4-4 Industrial Facilities Filed as Non-Exposure

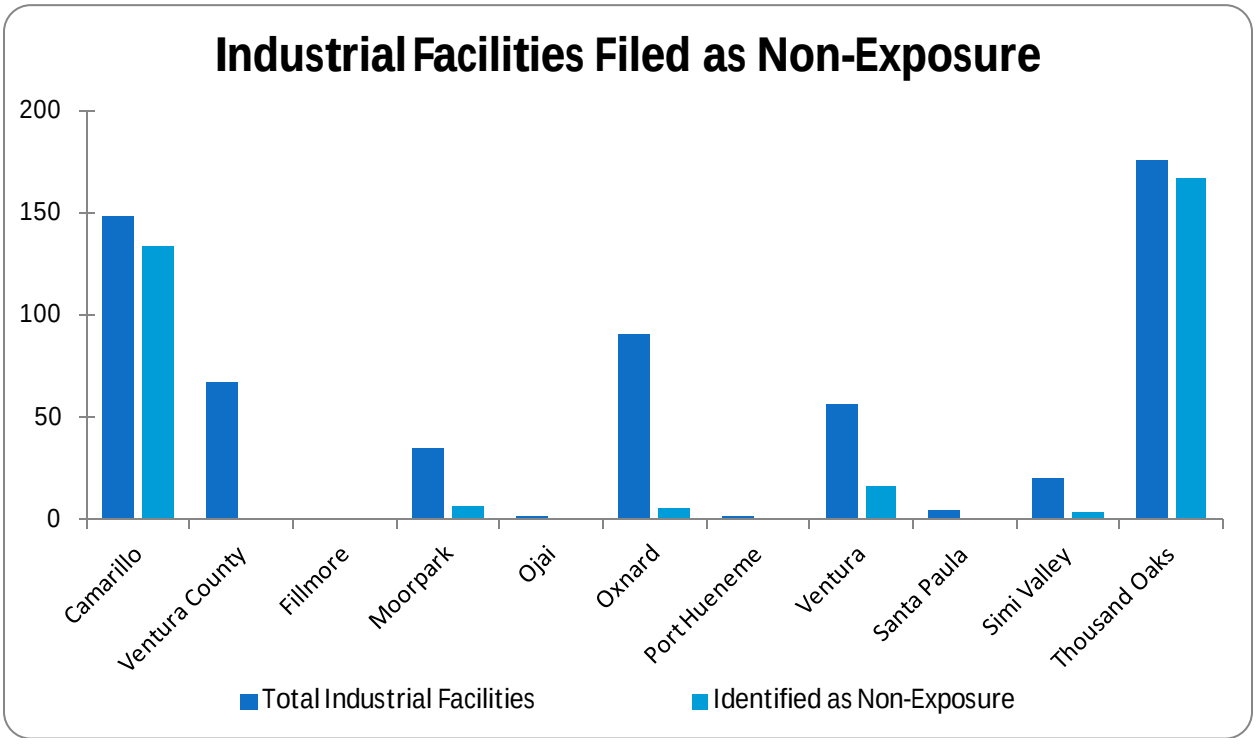
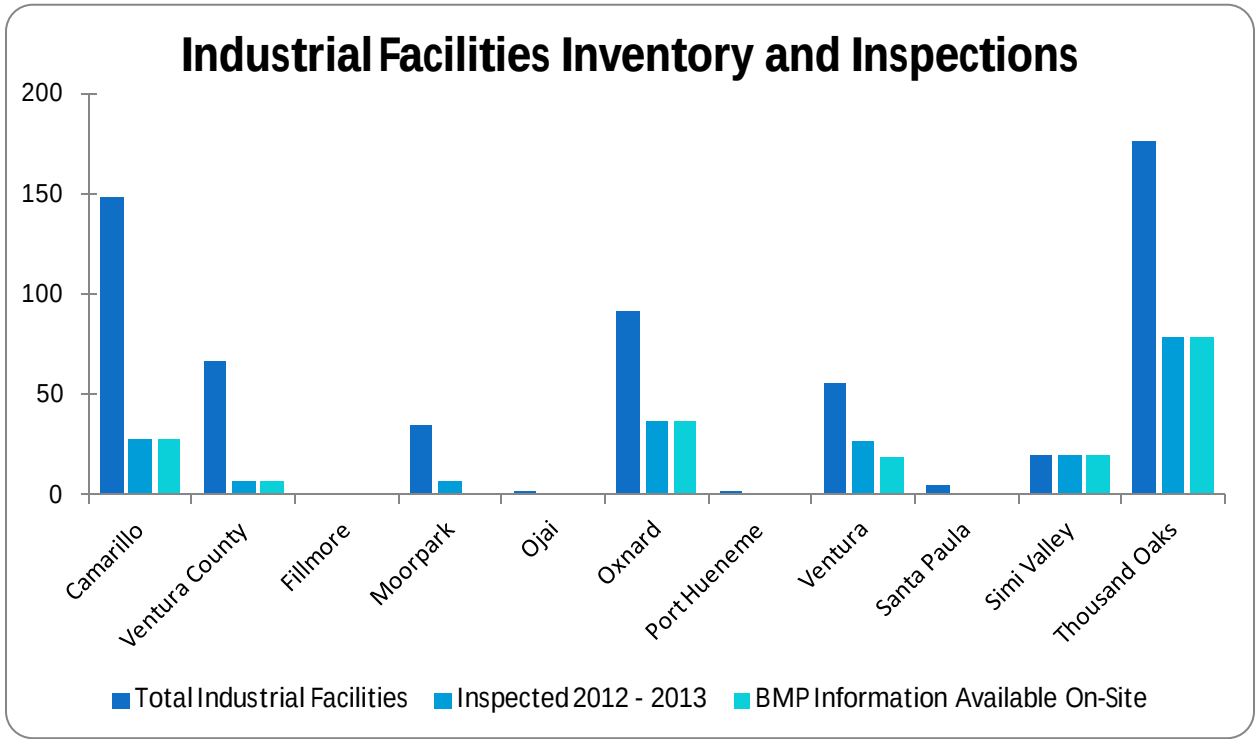


Figure 4-5 Industrial Facilities Inventory and Inspections



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:

- ☐ INITIAL INSPECTION (due 07/01/2012)
- ☐ 1st Follow-up after INITIAL INSPECTION
- ☐ 2nd Follow-up after INITIAL INSPECTION
- ☐ 2nd Inspection of Facilities with Exposure (6 months after INITIAL INSPECTION and not later than 07/01/2015)
- ☐ 1st Follow-up after 2nd Inspection of Facilities with Exposure
- ☐ 2nd Follow-up after 2nd Inspection of Facilities with Exposure
- ☐ 2nd Inspection of NON-EXPOSURE FACILITIES (minimum 20% annually)
- ☐ Complaint Response

INSPECTOR NAME: _____ INSPECTION DATE & TIME: _____
FACILITY NAME: _____
FACILITY ADDRESS: _____
FACILITY CONTACT NAME: _____ PHONE: _____
FACILTY CONTACT SIGNATURE (acknowledging receipt): _____
FACILITY'S SIC/NAICS CODE: _____
FACILITY CATEGORY: _____
THIS FACILITY IS COVERED UNDER:

- ☐ Industrial Activities Stormwater General Permit (IASGP) WDID #: _____
  Is SWPPP available on the site? ☐YES ☐NO
- ☐ Other Permit, Specify _____
- ☐ No Exposure Certification; 'Notice of Non-applicability' file date: _____
  RWQCB Approval Letter received on: _____
- ☐ None

FACILITY IS LOCATED IN ONE OF THE FOLLOWING WATERSHEDS:

- ☐ Calleguas Creek
- ☐ Malibu Creek
- ☐ Santa Clara River
- ☐ Ventura River
- ☐ Cuyama River
- ☐ Misc. Coastal

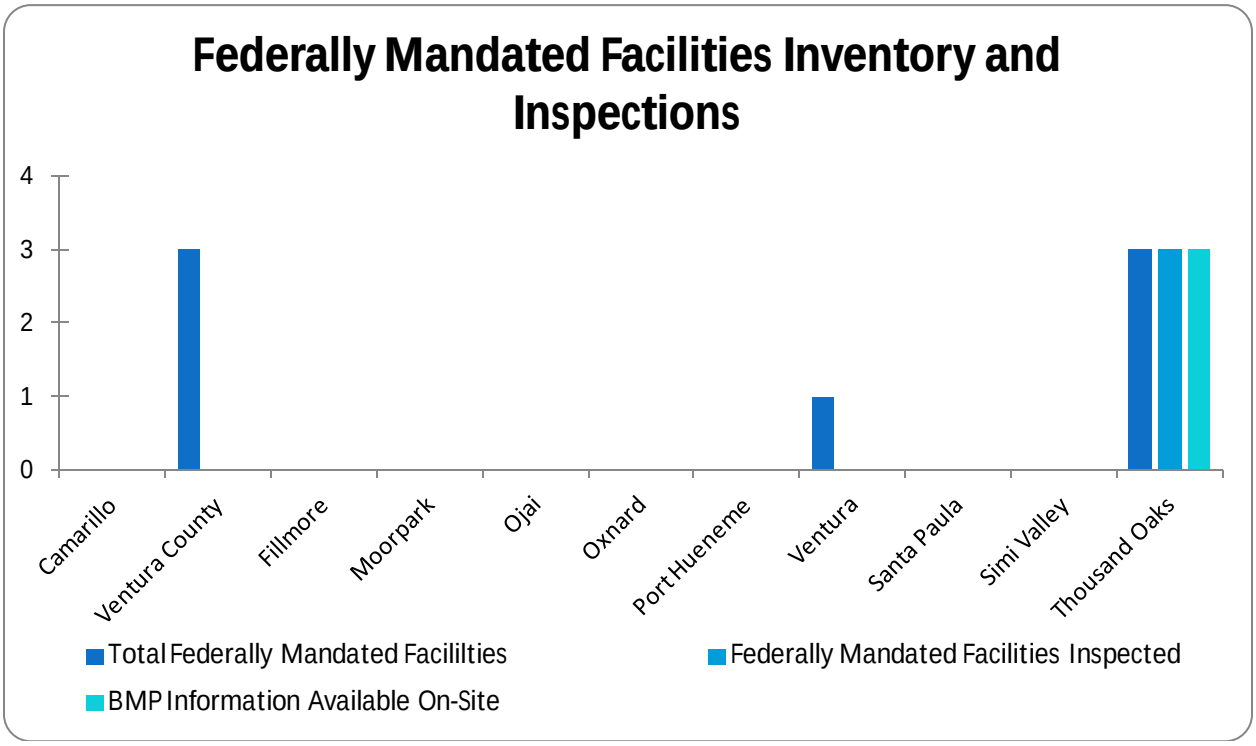
A. Brief Description of Facility Operations:	Yes	No	N/A
Does this facility discharge to MS4s that directly discharge to ESAs or 303(d) listed waterbodies? If YES, make a note if BMPs are sufficient or recommend additional BMPs			
List principal products used and status of exposure to stormwater			
Describe activities that have potential to pollute stormwater:			

BMP#	B. Stormwater Management Criteria	Yes	No	N/A
SC-10	Unauthorized Non-stormwater discharges Are controls being implemented to eliminate non-stormwater discharges?			

Page 1 of 2

Industrial facilities inspection form

Figure 4-6 Federally Mandated Facilities Inventory and Inspections

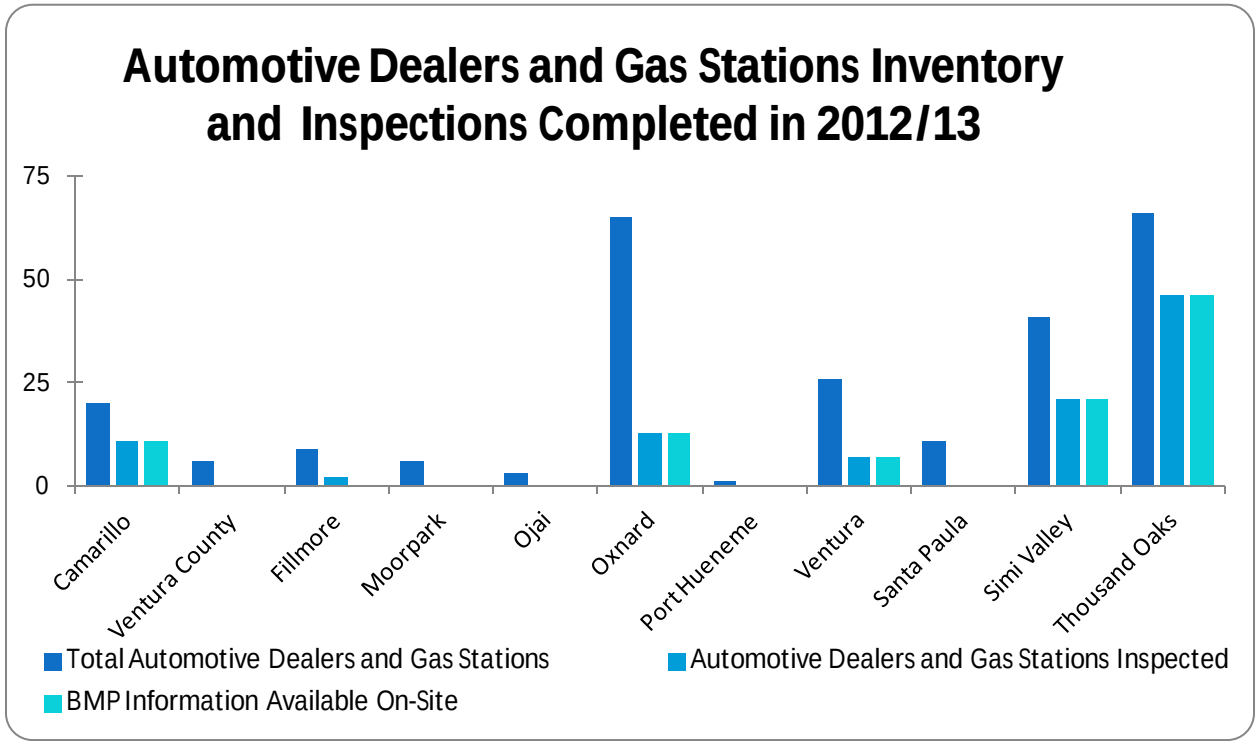


Other Federally-mandated Facilities as specified in 40 CFR 122.26(d)(2)(iv)(C) are also required to obtain coverage under the IAGSP. Again, facility ownership (federal, state, municipal, private) and are not factors in this definition. Included in this category are:

- 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))

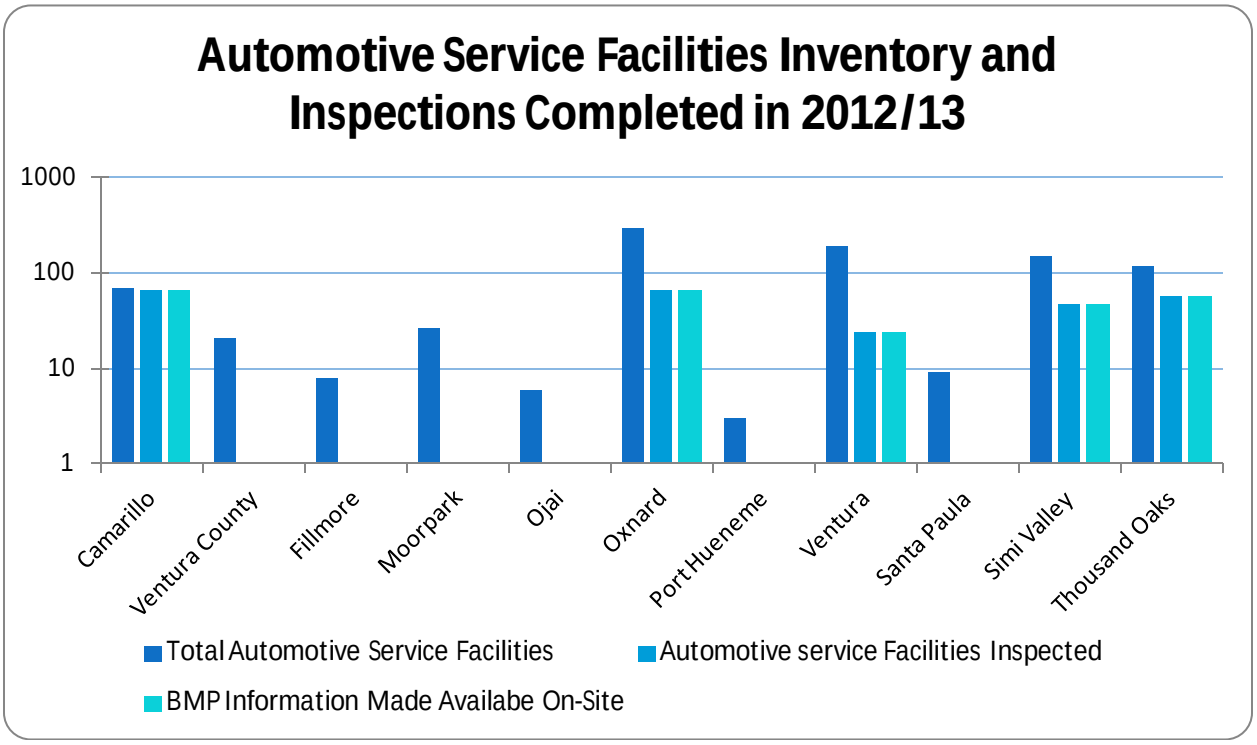
Inspections are conducted at all automotive and gas station facilities even if these facilities do not have outdoor activities or storage that are exposed to stormwater. In addition, the Permittees have identified other facilities where engine oil is present and represents a potential threat to stormwater 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

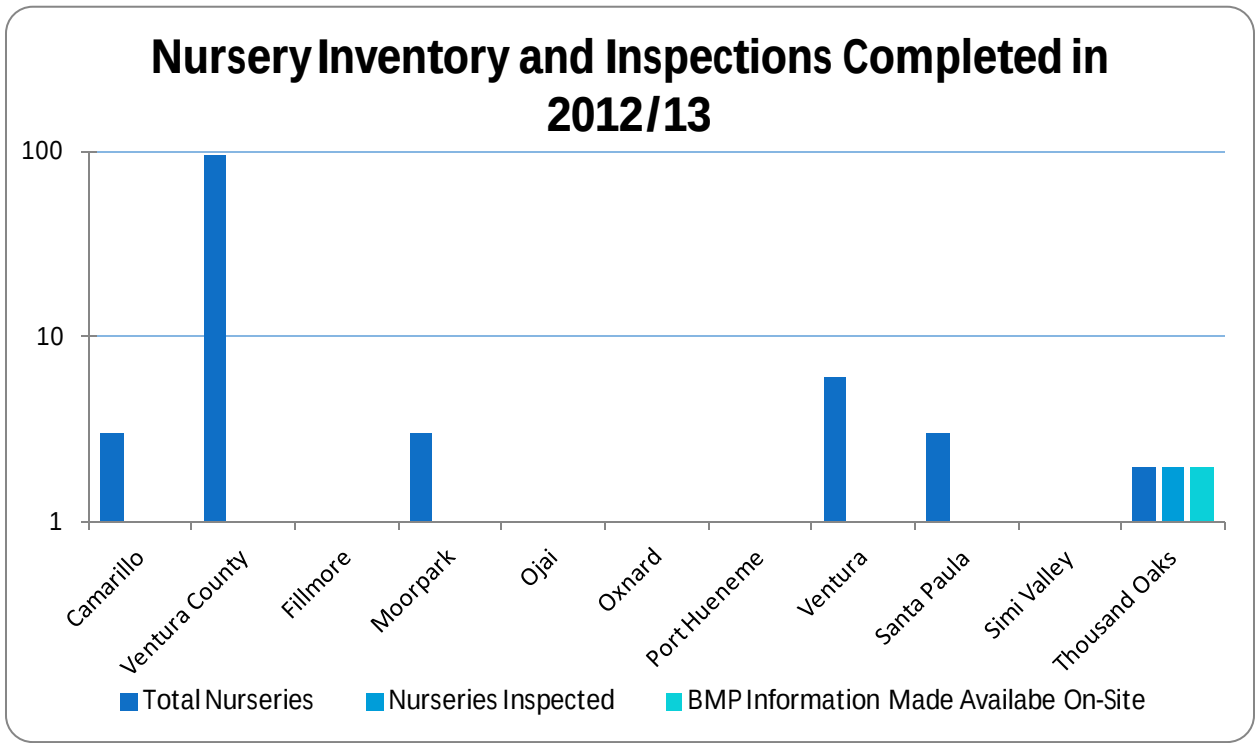
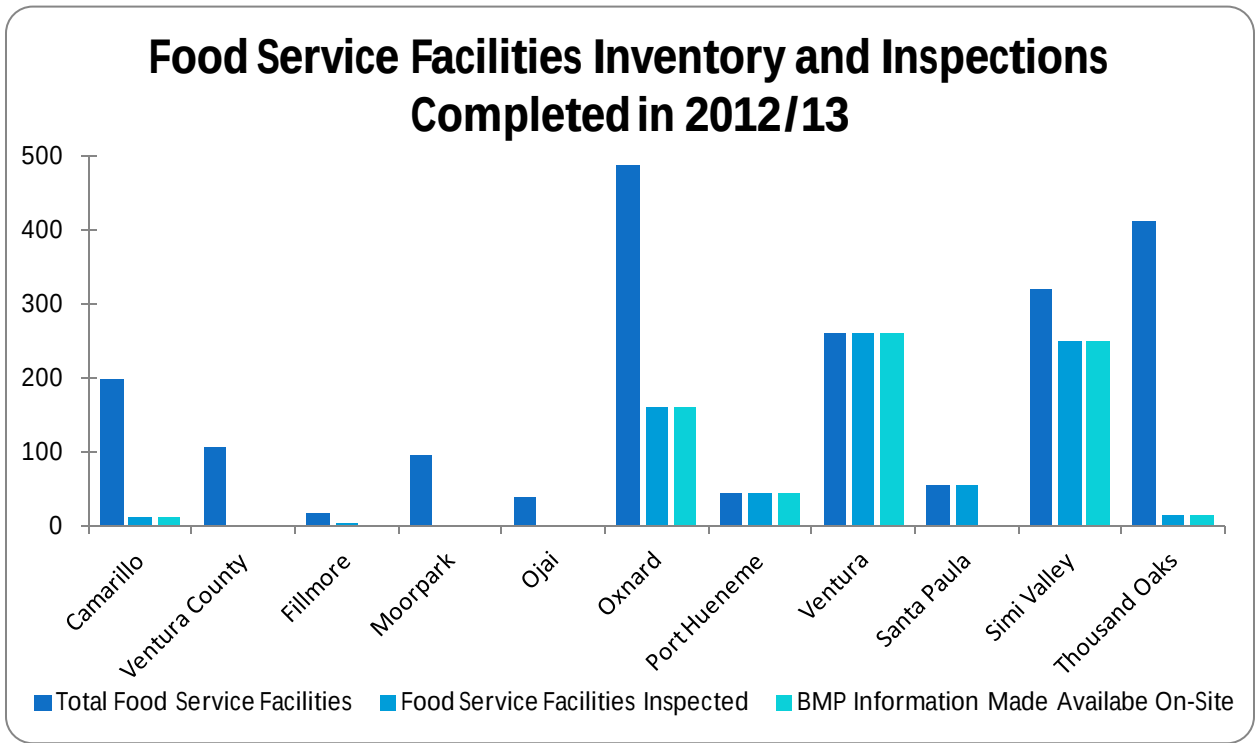


Figure 4-11 Food Service Facilities Inventory and Inspections



COUNTY OF VENTURA UNINCORPORATED AREA
STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection Checklist
Restaurants

INSPECTION TYPE:

- ☐ INITIAL INSPECTION (due 07/01/2011)
- ☐ 1st Follow-up after 2nd Inspection
- ☐ 1st Follow-up after INITIAL INSPECTION
- ☐ 2nd Follow-up after 2nd Inspection
- ☐ 2nd Follow-up after INITIAL INSPECTION
- ☐ Complaint Response
- ☐ 2nd inspection (6 months after INITIAL INSPECTION and not later than 07/01/2014)

INSPECTOR NAME: _____ INSPECTION DATE & TIME: _____
FACILITY NAME: _____
FACILITY ADDRESS: _____
FACILITY CONTACT NAME: _____ PHONE: _____
FACILITY CONTACT SIGNATURE (acknowledging receipt): _____
FACILITY'S SIC/NAICS CODE: _____ PRINCIPAL PRODUCTS USED: _____
STATUS OF EXPOSURE: _____
FACILITY IS LOCATED IN ONE OF THE FOLLOWING WATERSHEDS:

- ☐ Calleguas Creek
- ☐ Malibu Creek
- ☐ Santa Clara River
- ☐ Ventura River
- ☐ Cuyama River
- ☐ Misc. Coastal

BMP #	Inspection Items	Yes	No	N/A
SC-10	Any non-stormwater discharge observed? If YES, attach photos and describe:			
SC-10 SC-34 SC-43	Any signs of staining or etching on concrete/asphalt surfaces from possible illegal discharge activities and any dripping or leaking at the storage areas or around the outside trash receptacles? If YES, attach photo and describe:			
SC-10	Are parking lots, walkways and patios swept and/or damp-mopped instead of washed and rinsed with a hose?			
SC-10	Is grease interceptor or tray properly maintained? Last service date:			
SC-11	Is the facility effectively preventing and responding to spills and leaks?			
SC-11	Does the facility have a plan to control spills onsite?			
SC-11	Are spill control materials kept on-site to contain and clean up any outdoor spills?			

Restaurant Inspection Checklist

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

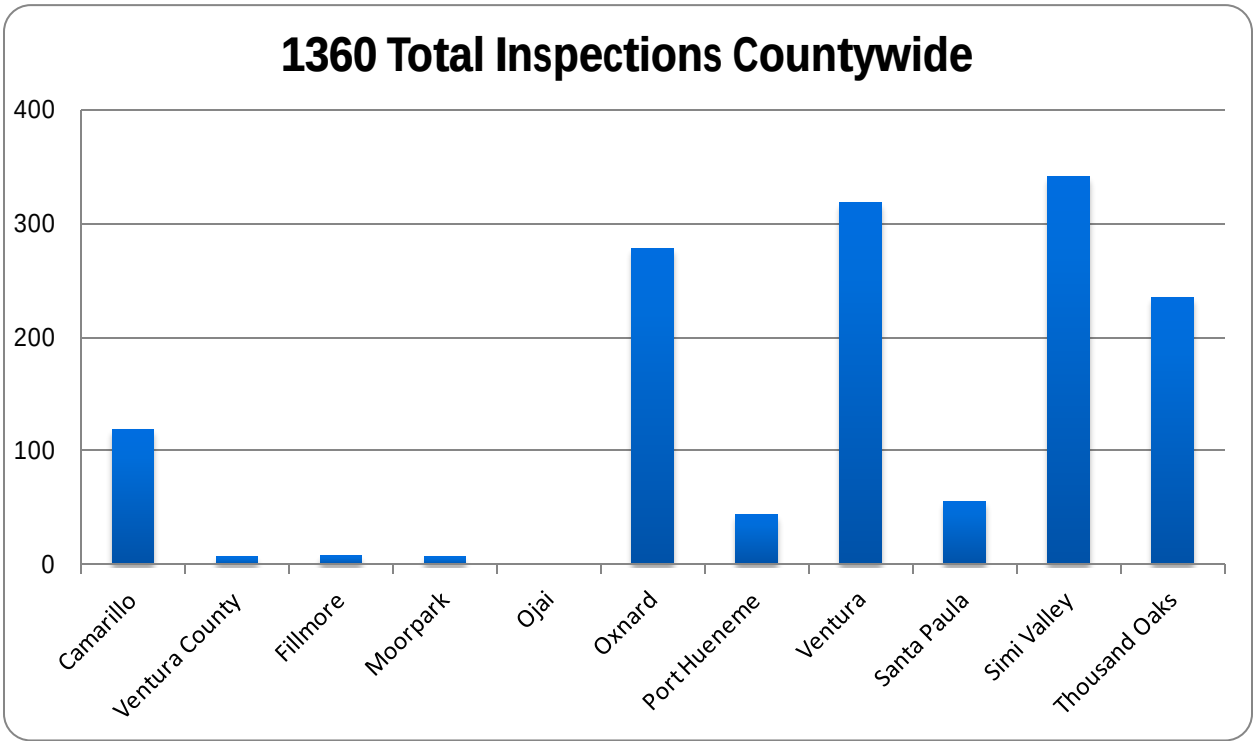
The Permittees' municipal ordinances currently allow authorized officers to enter any property or building to perform inspections. On refusal to allow inspection by the owner, tenant, occupant, agent or other responsible party, the Permittees may seek an Administrative Search Warrant. All the Permittees 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme		R	
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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.

Performance Standard 4-3

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

Performance Standard 4-4

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

Conduct Follow-up Inspections as Necessary

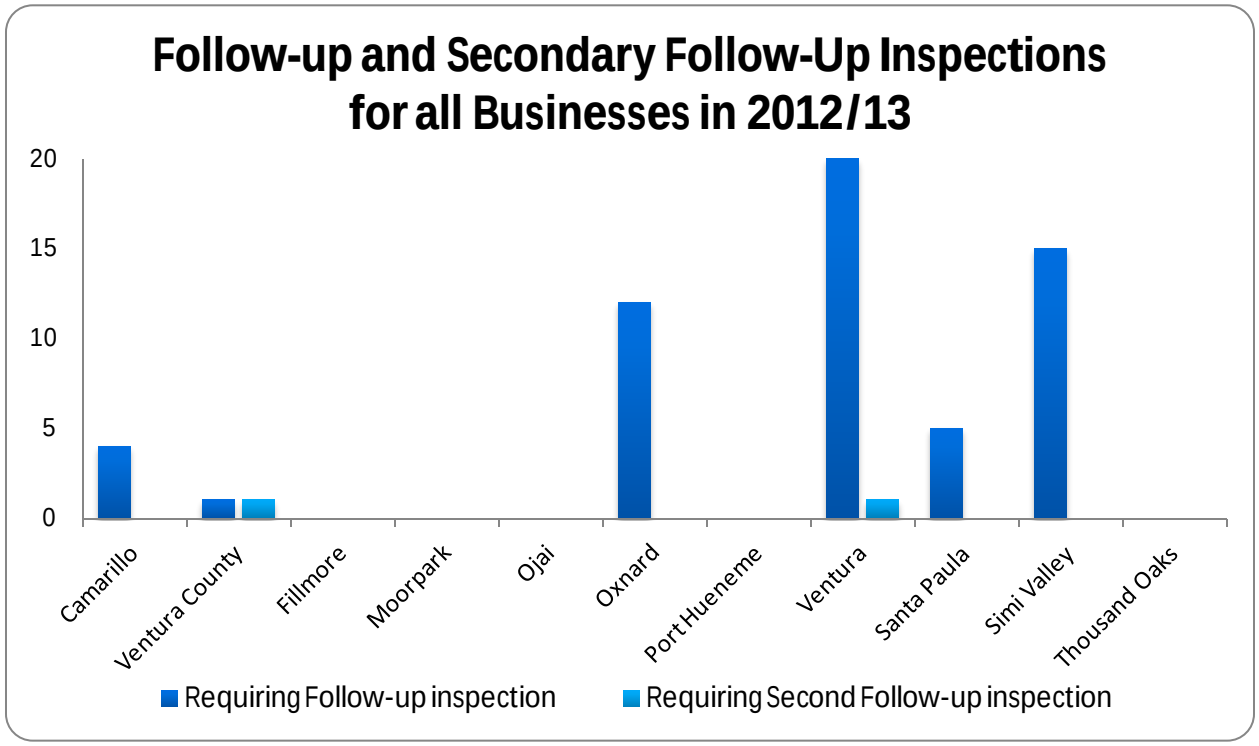
Whenever the Permittee determined that an operator had failed to adequately implement all necessary BMPs as required by the Permit, or otherwise were deemed out of compliance, the Permittee engaged in progressive enforcement action. If the facility can be brought into compliance while the inspector is 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	R		
Ventura County	R		
Fillmore	R		
Moorpark		R	
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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 developed 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


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.

For more information on preventing stormwater pollution call:

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.

COMMUNITY FOR A CLEAN WATERSHED

cleanwatershed.org

The Watershed Should Only Shed Water

The Community for a Clean Watershed program was established to protect Ventura County's watersheds by preventing stormwater pollution.

Fact Sheet for Pesticide Applicators

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.

Performance Standard 4-6

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

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.

Performance Standard 4-7

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

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.

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

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

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

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 compliant.

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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

During this reporting period, the Permittees trained 37 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 · County Health restaurant inspectors	· Classroom · Field Demos	· Overview of stormwater management program · Stormwater ordinance and enforcement policy · BMPs for facilities · 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 completed by this reporting year. Some Permittees initiated inspections over the 2009/10 reporting periods and continued them through the 2012/13 period to meet this deadline. (L1) Permittees conducted 57 follow-up inspections when needed to ensure compliance. Since the Permit adoption over 7000 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 inspection 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 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 100% 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 since the adoption of the 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 areas, 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 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 as well as 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 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 for 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.

A curb cut leading to an LID feature

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.

Performance Standard 5-1

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

Before and after pictures of infiltration area of parking lot during construction

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	6/1/2011	9/1/2010
Fillmore	Yes	1/1/2020	
Moorpark	Yes	12/1/2013	
Ojai	Yes		
Oxnard	Yes	7/12/1905	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		
Thousand Oaks	Yes		
Housing			
Camarillo	Yes	10/1/2013	
County of Ventura	yes	10/1/2013	
Fillmore	Yes	2/1/2014	
Moorpark	No	9/1/2013	
Ojai	Yes		
Oxnard	Yes	7/12/1905	3/12/2009
Port Hueneme	No	1/1/2015	To Be Determined
Ventura	Yes		
Santa Paula	Yes	1/1/2012	12/31/1998
Simi Valley	Yes		
Thousand Oaks	Yes	9/10/2013	
Conservation			
Camarillo	No		
County of Ventura	yes	6/1/2011	9/1/2010
Fillmore	Yes	1/1/2020	
Moorpark	Yes	7/1/2014	
Ojai	Yes		
Oxnard	Yes	7/12/1905	3/12/2009
Port Hueneme	Yes	1/1/2015	
Ventura	Yes		
Santa Paula	Yes	1/1/2015	12/31/1998
Simi Valley	Yes		
Thousand Oaks	Yes	10/8/2013	
Open Space			
Camarillo	No		
County of Ventura	yes	6/1/2011	9/1/2010
Fillmore	Yes	1/1/2020	
Moorpark	Yes	7/1/2014	
Ojai	Yes		
Oxnard	Yes	7/12/1905	3/12/2009
Port Hueneme	Yes	1/1/2015	
Ventura	Yes		
Santa Paula	Yes	1/1/2015	12/31/1998
Simi Valley	Yes		
Thousand Oaks	Yes	10/8/2013	

Specific efforts some Permittees have made to address stormwater issues in the planning process are detailed below:

Camarillo On 4/3/2012 the City updated Community Design Element (Res. 2012-14) to include sustainable practices and guidelines including discussion on site planning techniques for water quality.

Ventura County - The 2011 Ventura County General Plan was updated for the 2020 horizon year. 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.

Moorpark - A Notice of Availability of the EIR including drafts of the adopted documents were submitted to the Regional Board in conjunction with the environmental review process for the Housing Element update. No comments were received. The updated versions are currently available on the Planning Division website.

City of Ventura – The CEQA review process includes procedures for considering potential SWQ impacts and providing appropriate mitagation. The CEQA review documents have been reviewed and revised for SW permit compliance. In 2000 the residents of Ventura culminated the "Ventura Vision" process with unanimous approval by the City Council. The visioning process guided the effort to revise the 1989 Comprehensive Plan and became the foundation for the new General Plan. The new General Plan moves beyond the "Vision" to encompass an implementation plan for future developments. The City Land Develpment inspector is responsible for all Planning and Land Development inspection requirements of the SW permit including proper installation of BMP's. Permittee operated BMP's are inspected a minimum of once per year. Parks personnel currently maintain City park swales. Private contractors perform inspections and cleaning of other City owned and operated treatment devices. O&M plans are required for private owned post construction BMP's. The declaration of covenants are recorded and outline the owner's responsibilities for maintenance.

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 to the new Permit requirements in 2011 (2011 TGM), and these requirements became effective during the last 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.

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

Projects must comply with one of two standards. For projects whose applications were deemed complete after the 2011 TGM effective date the Permittees are to ensure they comply with the requirements in the 2010 Permit. Those deemed complete prior to the effective date must 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.

Low Impact Development BMP

Low Impact Development (LID)

LID is a device in the overall watershed process which promotes the coordinated development and management of water, land, and related resources. By linking traditional development topics such as land use, water supply, wastewater treatment/reclamation, flood control/drainage, water quality, and hydromodification management into a cohesive hydrologic system developments should recognizes their interdependencies and minimizes their potentially negative effects on the environment. An example is combining stormwater treatment, hydromodification control, and flood control in a single regional infiltration basin that recharges groundwater, incorporates recreation, and provides habitat. Another example is using Smart Growth principles to help reduce the environmental footprint while still accommodating growth.

Similar to Source Control Measures, which prevent pollutant sources from contacting stormwater runoff, Retention BMPs use techniques to infiltrate, store, use, and evaporate runoff onsite to mimic pre-development hydrology, to the extent feasible. The goal of LID is to increase groundwater recharge, enhance water quality, and prevent degradation of downstream natural drainage channels. This goal may be accomplished with creative site planning and with incorporation of localized, naturally functioning BMPs into the project. Implementation of Retention BMPs will reduce the size of additional Hydromodification Control Measures that may be required for a new development or redevelopment project, and, in many circumstances, may be used to satisfy all stormwater management requirements.

Applicable projects must reduce Effective Impervious Area (EIA) to less than or equal to five percent ($\leq$5%) of the total project area, unless infeasible. Impervious surfaces are rendered "ineffective" if the design storm volume is fully retained onsite using Retention BMPs. Biofiltration BMPs may be used to achieve the 5% EIA standard if Retention BMPs are technically infeasible.

Generally, the 2011 TGM advises to first design for the largest hydrologic controls (such as matching post development 100-year flows with pre-project 100-year flows for flood mitigation requirements), according to the appropriate City or County drainage requirements. Secondly, the 2011 TGM advises to check if flood mitigation will reduce or satisfy the stormwater management requirements. If it does not, then more controls are necessary. Flood mitigation may provide the necessary sediment and pollution control, thereby reducing maintenance requirements for the stormwater management BMPs. A sequence of hydrologic controls should be considered, such as site design, flood drainage mitigation, and Retention BMPs. Biofiltration BMPs and Treatment Control Measures can be considered where the use of Retention BMPs is technically infeasible. Each of these controls will have an influence on stormwater runoff from the new development or redevelopment project.

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 categories described in the 2000 Permit. 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, 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 control peak stormwater runoff discharge rates, conserve natural areas, properly design trash storage areas, meet design standards for structural or treatment control BMPs, and provide proof of ongoing BMP maintenance among others designed to reduce the long term pollutant effects of development.

Performance Standard 5-2

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

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

Low Impact Development BMP incorporated into the landscaping

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

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:

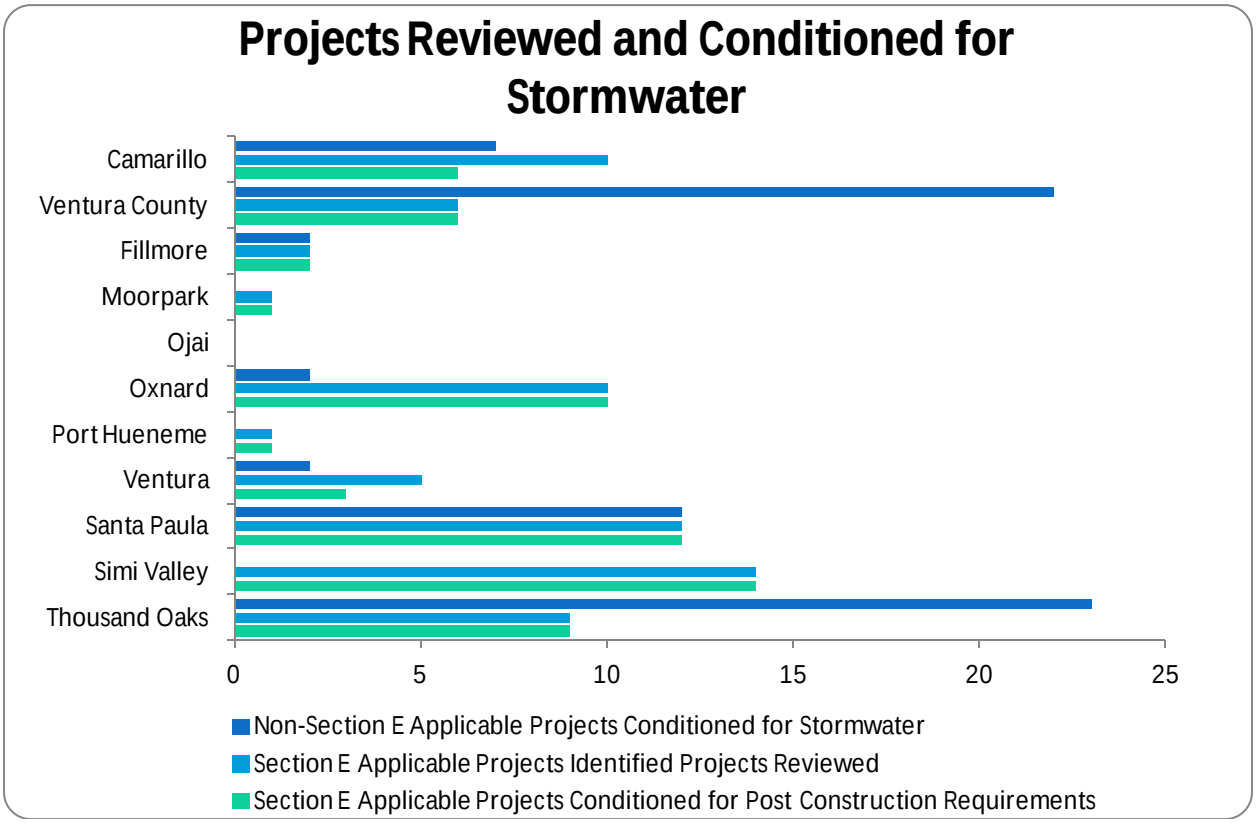
- Project characteristics;
- Site factors (e.g., slope, high water table, soils, etc.);
- Pollutant removal capability;
- Short term and long term costs;
- Responsibility for maintenance;
- Contributing watershed area; and
- Environmental impact and enhancement.

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 certain BMPs that are clearly be more appropriate and effective than others, the BMP selection process reflects this variability.

Cistern installation at a cemetery

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 that 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), and a Hydromodification Control Plan for the county is approved by the Executive Officer. Until the approval of the HCP, the Interim Hydromodification Control Criteria will be applicable to non-exempt new development and redevelopment projects.

The purpose of Hydromodification Control Measures is to minimize impacts to natural creeks due to changes in post-development 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.

Performance Standard 5-3

Participate in the Stormwater Monitoring Committee's Hydromodification Control Study			
	Yes	No	N/A
Ventura Countywide Stormwater Quality Program	R		

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			R

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.)." The susceptibility of receiving waters to hydromodification impacts is summarized by identifying non-susceptible receiving waters and describing the location of modified conveyance systems. Water bodies within and downstream of each Permittee's jurisdiction have been mapped as either susceptible or non-susceptible to hydromodification impacts. Per the Permit, non-susceptible water bodies include: lakes, sumps, tidally influenced water bodies, large rivers, and modified conveyances. Water bodies that are considered susceptible to hydromodification impacts are the remaining natural stream channels. The Receiving Water Susceptibility Map was created to provide quick information to the development commuity. This map is considered a living document that will be updated by the Permittees if more accurate information on drainage infrastructure is obtained in the future.

While hydrologic analyses for flood control, such as those contained in the Ventura County Hydrology Manual (VCWPD, 2010), are based on evaluating the magnitude of one or a few large discrete events (on the order of hours to days), hydromodification analysis focuses on continuous simulations (spanning over several decades) which take into account both flow magnitude and duration. Because hydromodification analysis looks at both magnitude and duration of the long-term record, the large but rare flowrates that are crucial to flood control can be relatively insignificant when considering sediment transport and changes in channel form. The most important range of flows from the perspective of affecting channel form are the relatively frequent flows that are contained primarily within the active channel and not the rare, high magnitude flows which exceed the rate of flow that can be contained in the normally wetter perimeter of the channel.

Flows which create high enough shear stresses to initiate sediment transport within the channel and which occur frequently enough to have influence over long-term stream morphology are considered "geomorphically-significant" flows. To provide perspective on the timescales of interest, a peak storm discharge may contribute to a bed scour hole, which slowly fills in with sediment over days to months after the event takes place. But if the time scale considered for stream stability is on the order of several decades, then the contribution of the short duration peak discharge to that scour hole may be a negligible perturbation on the overall record of channel form.

To ensure the HCP adequately addressed the Permit requirements, and the concerns of the stakeholders, a public stakeholder meeting was held on July 30, 2013. The goals of the meeting were to explain the new hydromodification control requirements, where they apply, and how the HCP will assist the development community in meeting them. This well attended meeting included representatives from the Regional Board, Heal the Bay, the development community, public agency staff, and a BMP manufacturer.

Comments were received from four stakeholders and incorporated as appropriate. All written comments were reviewed by our working group comprised of land development and planning staff from all Ventura County Permittees. Consensus was reached on how to best incorporate the comments while maintaining the HCP's usefulness and compliance with the Permit requirements. Written comments can be found on the Manual's website along with a summary of comments with our responses at www.vcstormwater.org/technicalguidancemanual.html.

To increase development community awareness and understanding to the new requirements the Program, in cooperation with the Building Industry Association, is planning a training seminar in January 2014 to

cover the new hydromodification requirements, and review the low impact development and water quality control Permit requirements explained in the Manual.

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) to demonstrate 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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

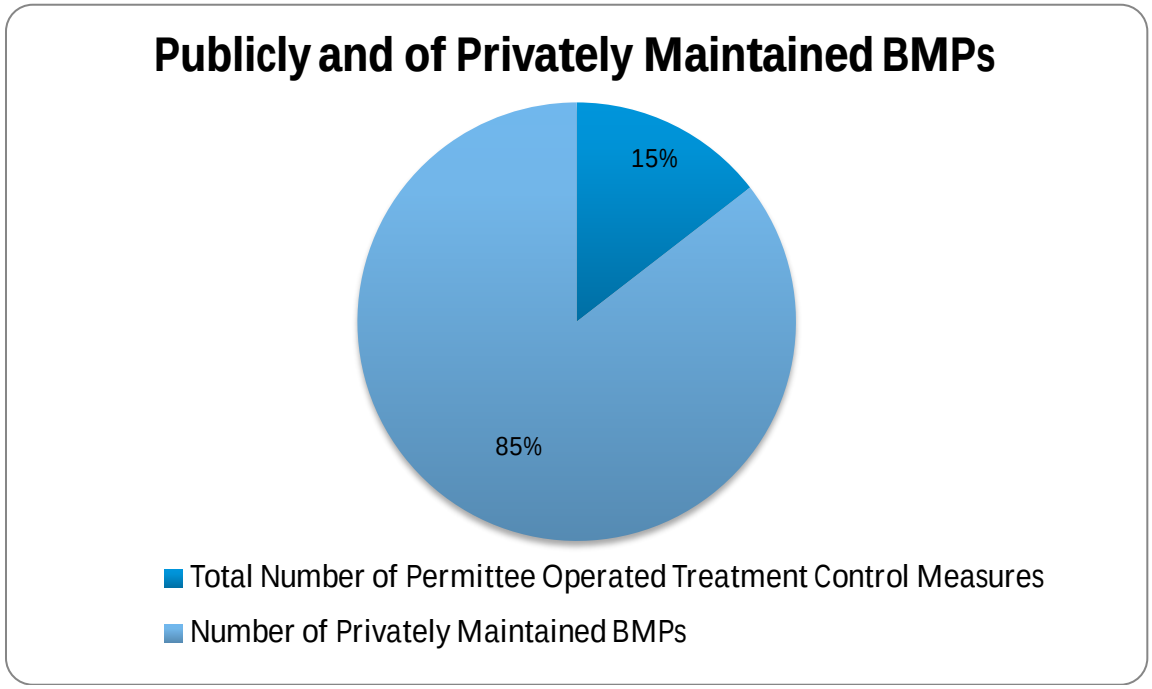
Established authority among municipal departments with project review jurisdictioncontrol BMPs. (by July 8, 2011)			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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.

Curb bump-out in residential neighborhood

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	R		
Ventura County	R		
Fillmore	R		
Moorpark			R
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

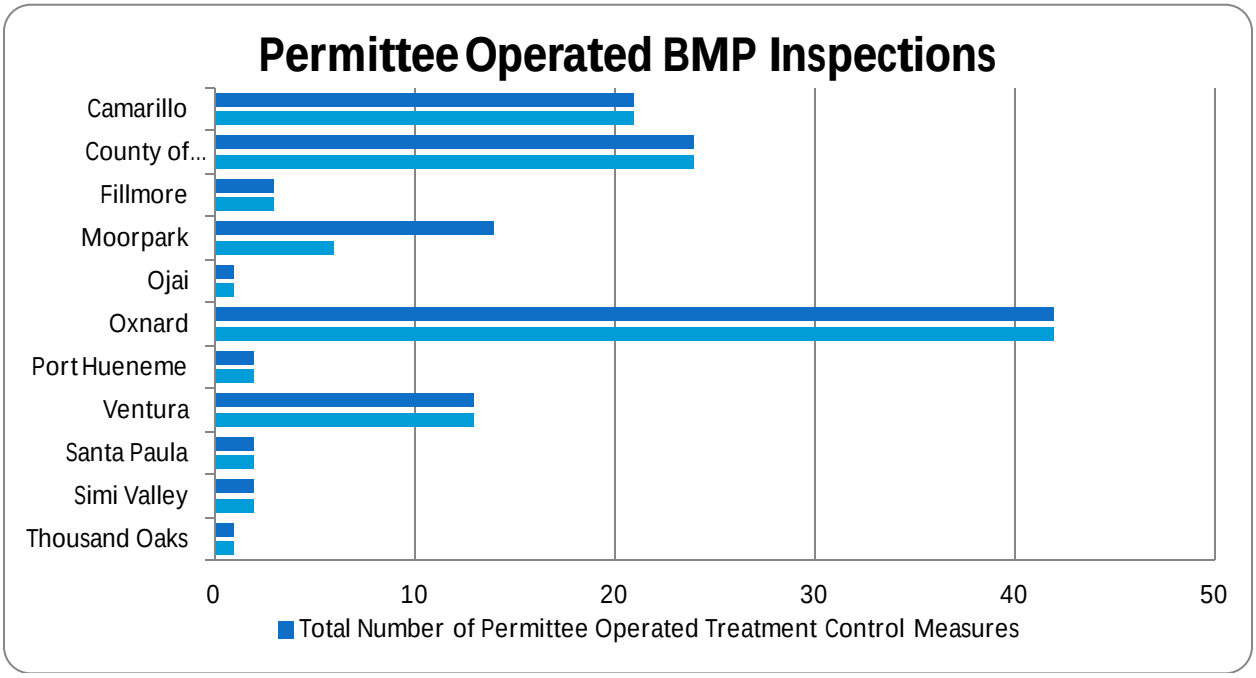
5.6.3 Conduct Inspections of Permittee Owned BMPs

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 Annual Report.

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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

Figure 5-3 Permittee Operated BMPs



Specific efforts some Permittees have made to inspect BMPs are detailed below:

Moorpark - Permittee Operated BMPs: Number of treatment control devices are lumped by project. For example, 14 City maintained BMPs included multiple individual BMPs per each project. Also, 1 of the 14 BMPs includes William Lyon Homes; which although will eventually become the City's responsibility, are currently maintained and operated by the HOA/Developer. The database of private BMPs is currently being developed and owner contacts are being updated for future contact/maintenance reports.

Oxnard - Technical Services Program-Storm Water (TSP-SW) staff conduct inspections of the 42 City owned treatment control devices. A vactor truck is used to pump out and remove sludge and debris as needed. All residual wastewater is disposed of in the Oxnard Wastewater Collection System. Technical Services Program-Stormwater staff work with the City Civil Engineers to maintain a database for all the privately owned BMPs. As projects are completed, developers are required to file a covenant of agreement detailing the location of the BMP device along with a maintenance plan/schedule, this data is entered into a spread sheet to be used to track the number of privately maintained BMPs and meet the annual report requirements.

Ventura - Inspections are performed routinely by either Parks personnel or private contractors who are responsible for the cleaning and maintenance of treatment devices operated by the City. Private owners are notified annually by registered mail, requesting maintenance records for post construction BMP's. A City inspection may satisfy the requirement for reporting from the private party. After inspection, if maintenance is required, an additional letter will be sent requiring follow-up and reporting. Enforcement follows no reply and/or non-compliance.

Thousand Oaks - Since June 30, 2013, an additional six (6) owners have remitted reports. An administrative processing fee of $85 has been billed to the remaining 38 location owners with a reminder notice to comply. Subsequent City inspection will incur additional costs to owners out of compliance.

Performance Standard 5-9

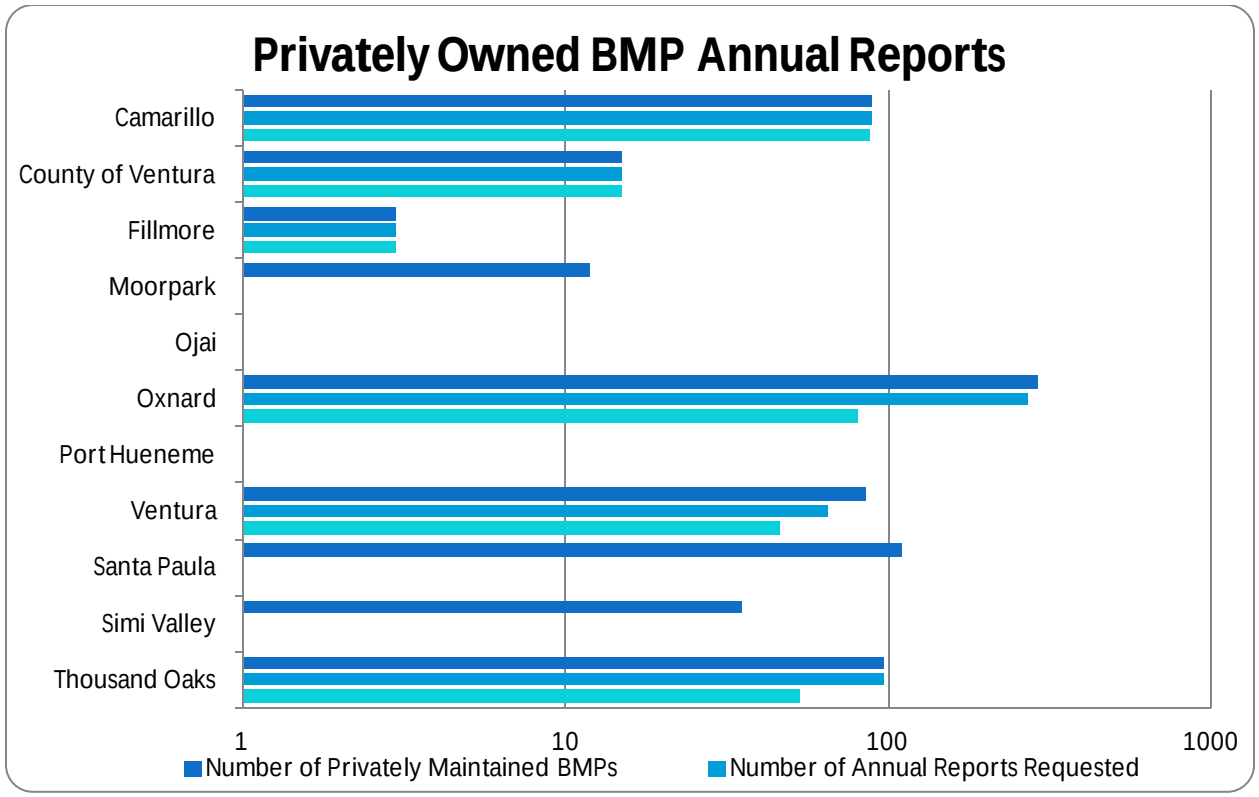
Inspect post-construction BMPs operated by the Permittees at least once every 2 years			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

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 statements 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

Diverted down spout from rain gutters



Performance Standard 5-10

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

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 agreements 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.

Performance Standard 5-11

Low Impact Development infiltration BMP

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

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 come in for approval. This six-hour training was attended by well over one hundred people.

Figure 5-5 Land Development Training

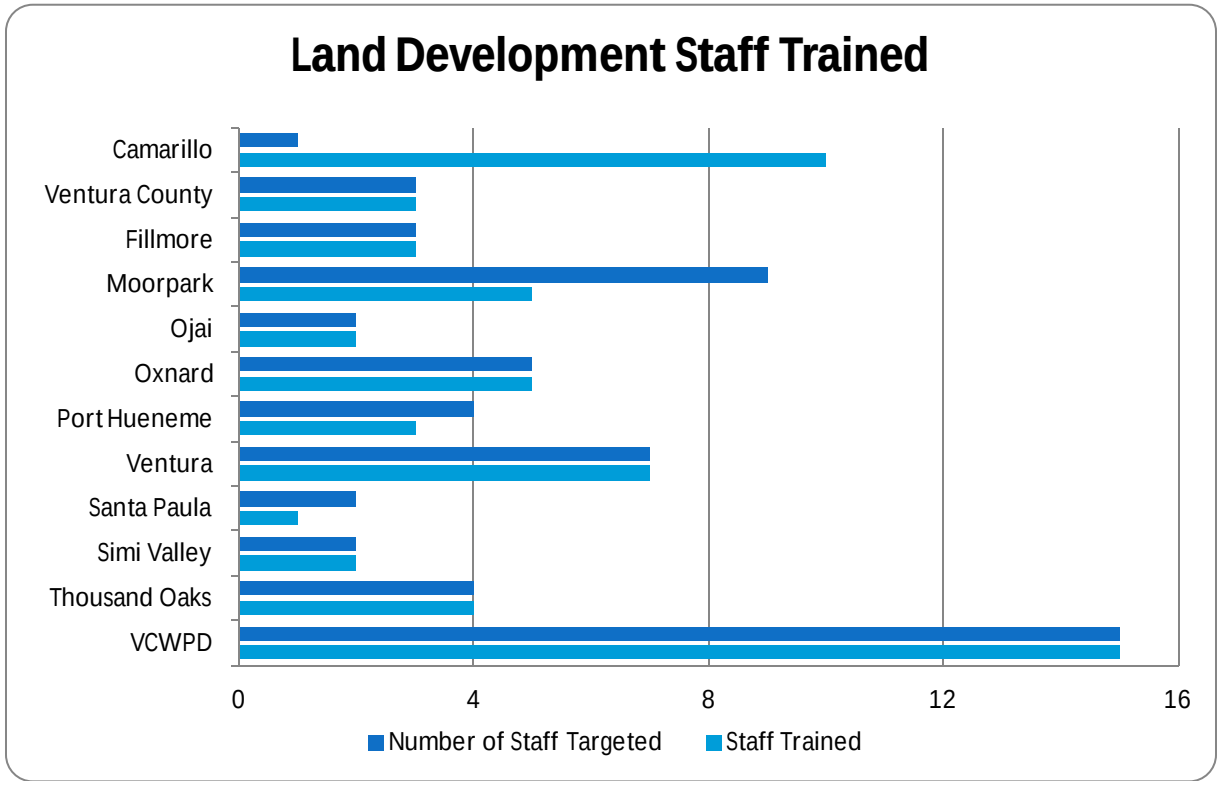


Table 5-3 Training Areas of Focus for the Planning and Land Development Program Element

Target Audience	Format	Subject Material
· Plan Checkers · Engineers · Building and Construction Inspectors · Builders · Design Professionals · Regulators · Resource Agencies · Other Stakeholders	· Classroom	· Overview of 2011 TGM · Integration of LID at various project scales · Guidance on relationship between LID strategies, source control BMPs, and hydromodification control requirements · 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 342 projects and required 134 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 projects 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)**. Permittees will implement the Hydromodification Control Plan once approved by the Regional Board's Executive Officer **(L1).**

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

Only two of the Permittees have needed to take enforcement action to ensure proper BMP maintenance – the rest 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 as required by the Permit.

5.10.6 Training

Conduct Training

During this reporting period, Permittees trained 60 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 2012/13 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 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 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 a 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:

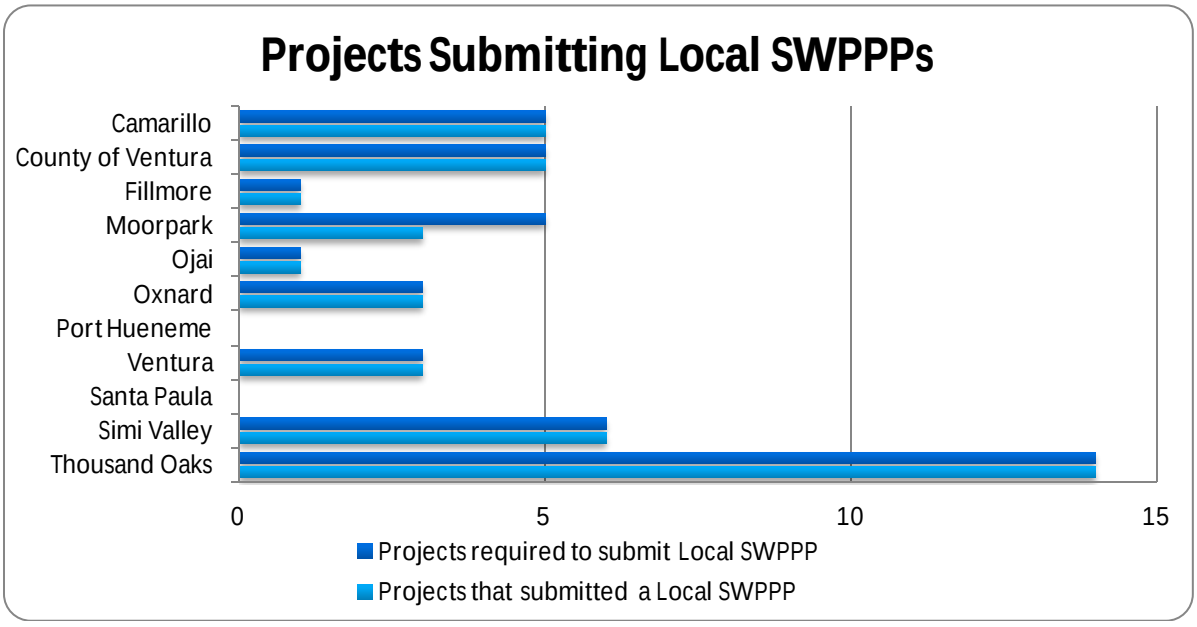
- Erosion from slopes and channels will be eliminated by implementing BMPs;
- Sediments generated on the project site shall be retained using structural drainage controls;
- No construction-related materials, wastes, spills, or residues shall be discharged from the project site to streets, drainage facilities, 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. Many Permittees have multiple Construction General Permit Qualified SWPPP Developers (QSD) and/or Qualified SWPPP Practitioners (QSP). The Permittees include provisions delineating contractor responsibilities for SWPPP preparation, implementation, 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.

The number of grading permits issued during this reporting period does not necessarily reflect the number of active construction projects. This is due to the fact that some larger projects 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, therefore 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 an NOI prior to issuing a grading permit. Proof of filing an NOI can include a copy of the completed NOI form and a copy of the check sent to the State Water

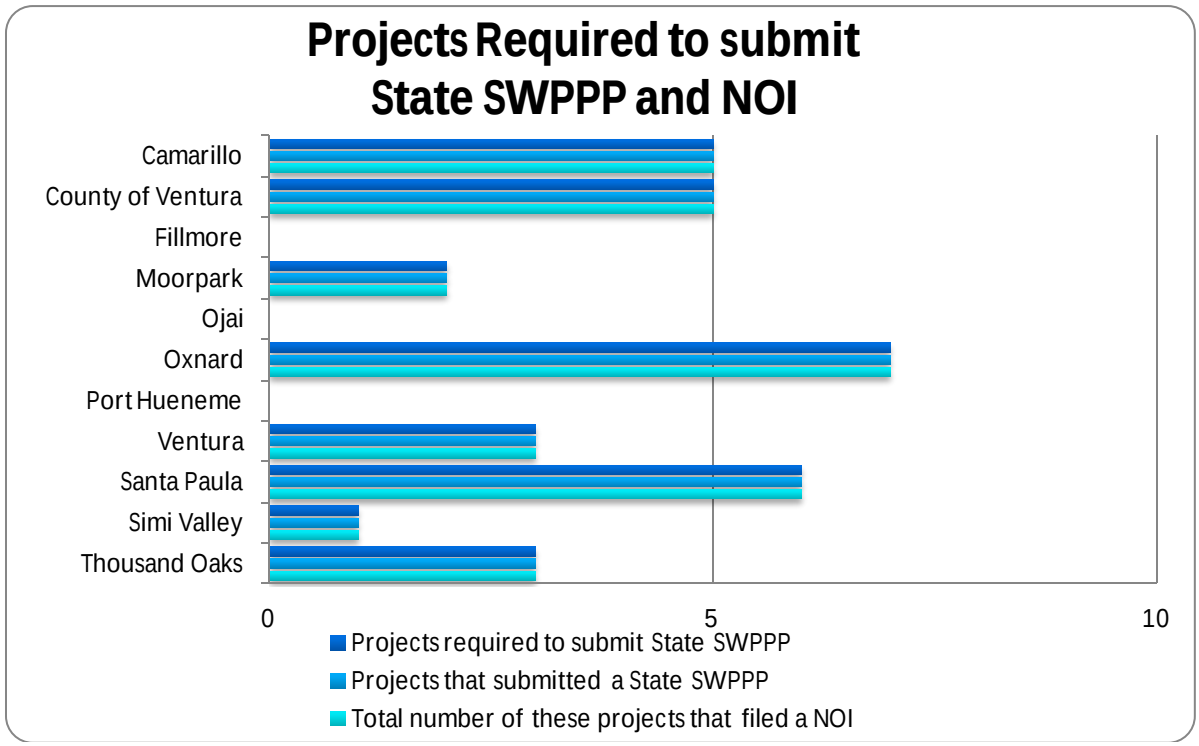
Resources Control Board (SWRCB), or a copy of the letter from the SWRCB with the Waste Discharge Identification Number (WDID) for the project.

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



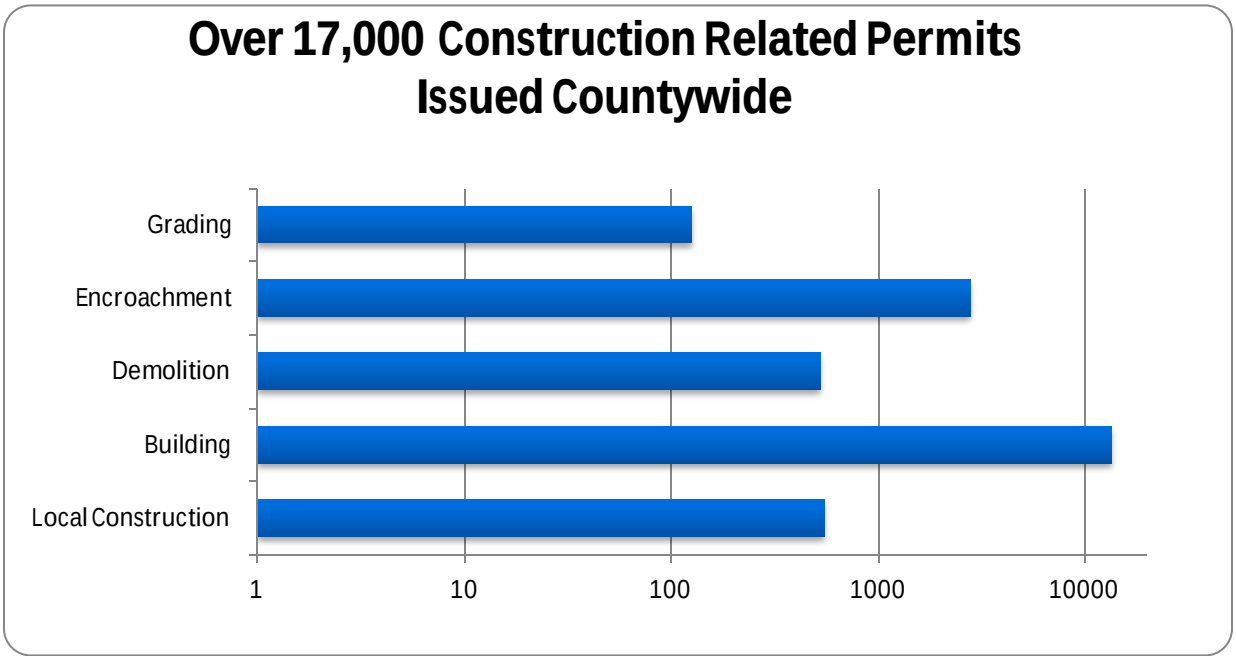
6.4 INVENTORY – DC2

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

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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai		R	
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula		R	
Simi Valley	R		
Thousand Oaks	R		
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

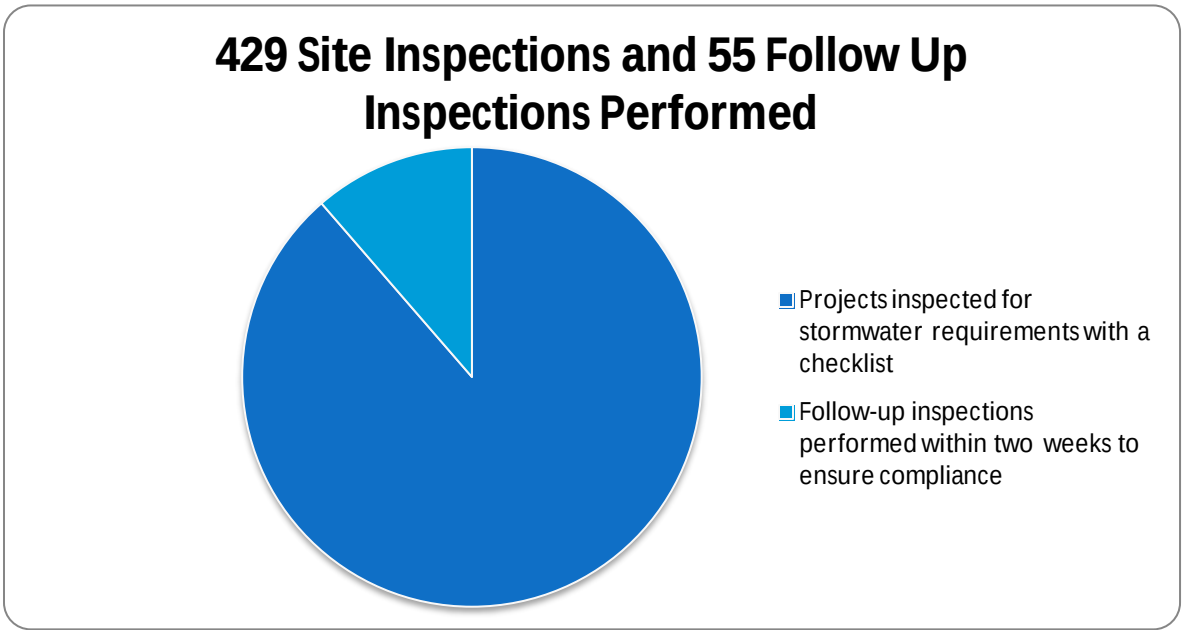
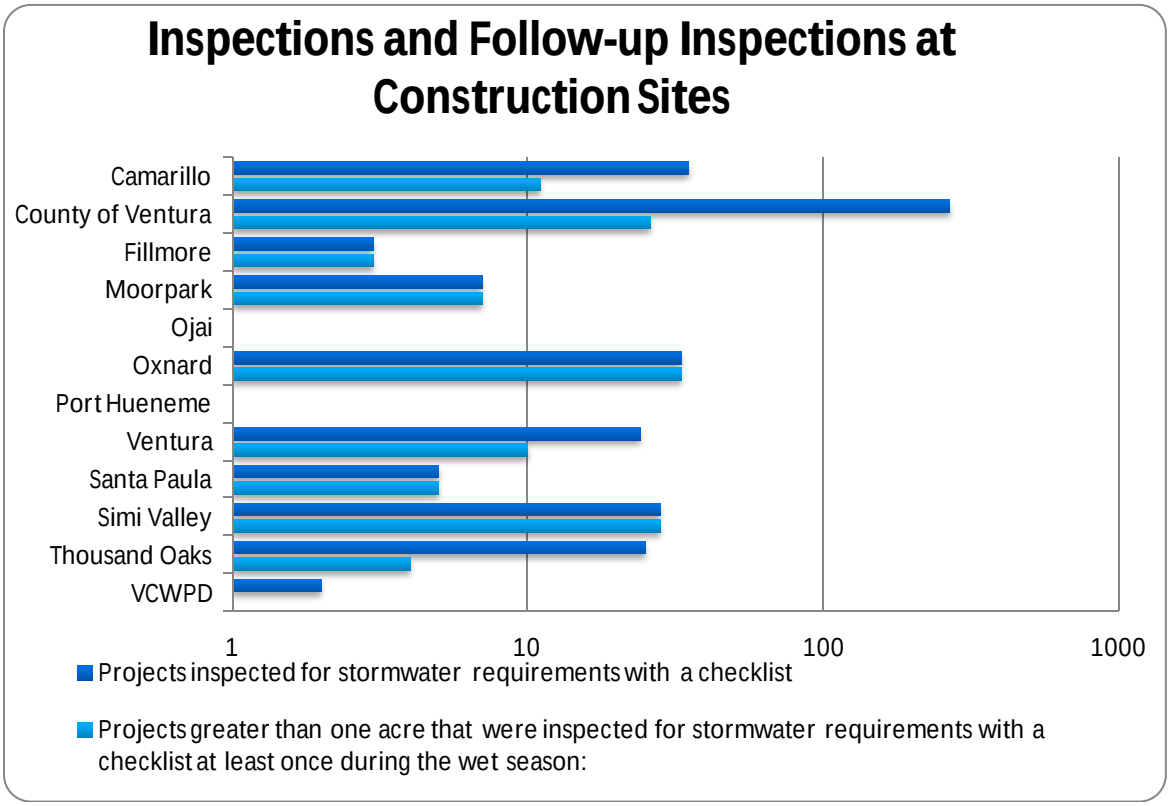


Figure 6-5 Construction Inspections and Follow-up Inspections



6.5.1 Inspect Construction Sites

Stormwater inspection at construction site

The Permittees inspect all active construction sites for the implementation of stormwater quality controls a minimum of once during the wet season, including all construction sites with SWPPPs 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.

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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme		R	
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
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	R		
Ventura County	R		
Fillmore			R
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme		R	
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
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	R		
Ventura County	R		
Fillmore			R
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley			R
Thousand Oaks	R		
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

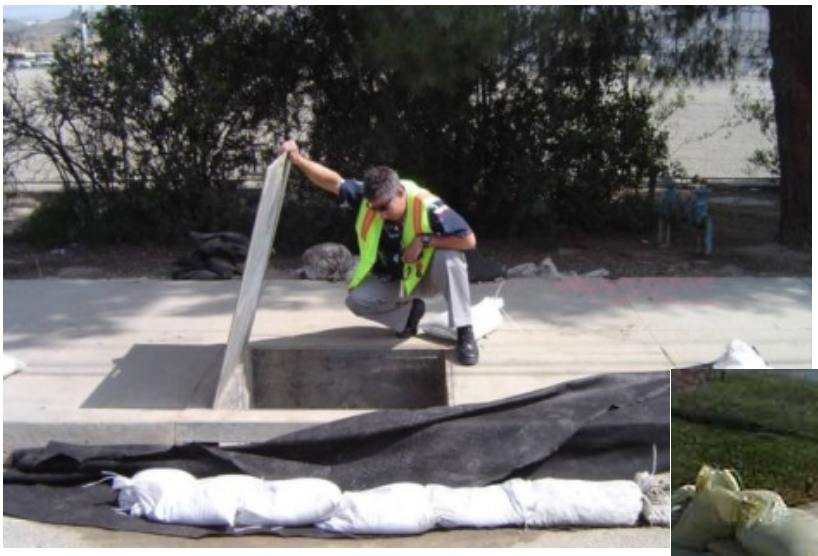
Projects that include roadbed or street paving, repaving, patching, digouts, or resurfacing roadbed surfaces inspected to ensure that the minimum set of BMPs was implemented			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore			R
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa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

Concrete washout at construction site



Inspection of catch basin BMPs

Catch basin protection

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

6.5.3 Inspect for Post-Construction Controls

Post-Construction BMP inspection

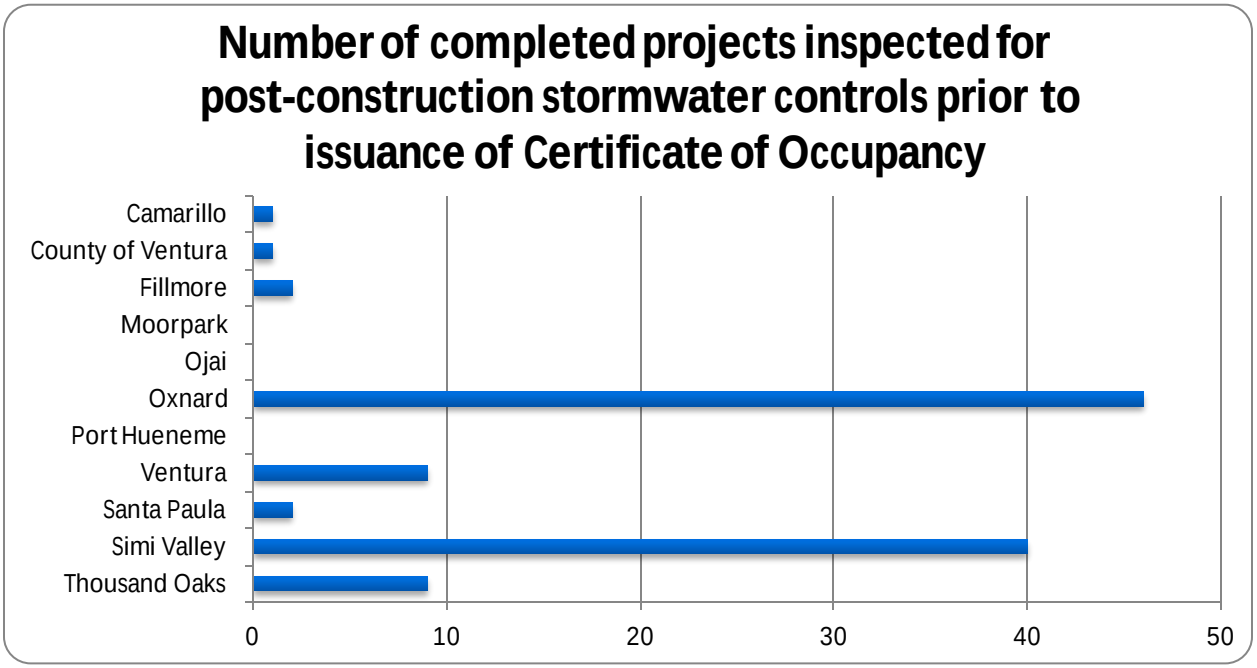
The Permittees inspected the site design as constructed for source control and treatment control BMPs conditioned during the development process to verify that they have been constructed in compliance with all specifications, plans, permits, ordinances, and the MS4 Permit prior to approving and/ or signing 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	R		
Ventura County	R		
Fillmore			R
Moorpark			R
Ojai			R
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks			

Figure 6-6 Inspections Prior to Certificate of Occupancy



6.6 ENFORCEMENT – DC4

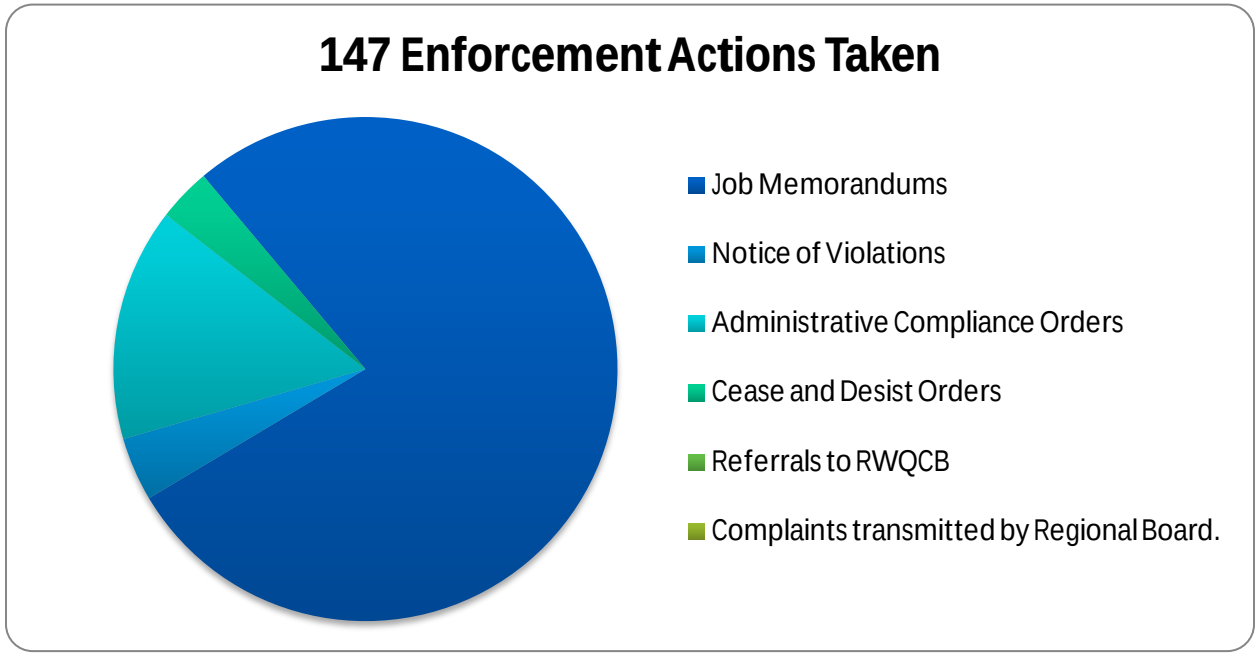
The Enforcement Control Measure outlines the progressive levels of enforcement applied to construction sites that are out of compliance with local ordinances and establishes the protocol for referring apparent violations of construction sites subject to the General Construction Permit to the Regional 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 preventing 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.

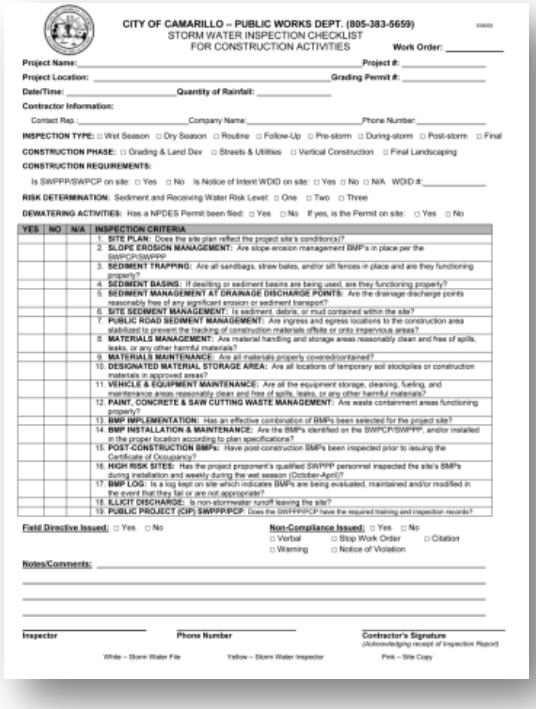
6.6.1 Enforcement Action to Achieve Compliance

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.

Figure 6-7 Enforcement at Construction Sites





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 condition(s)?
			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 off-site 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

6.6.2 Implement Progressive Enforcement and Referral Policy

During the reporting year no construction site failed to return to compliance and none were 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 2012/13

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

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

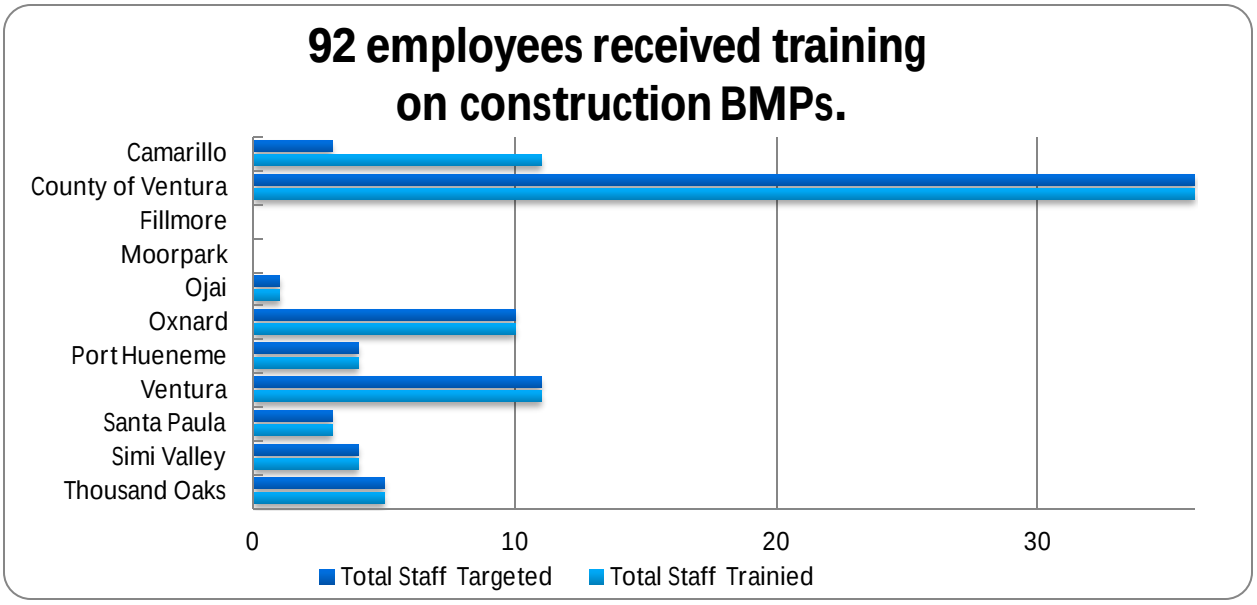
Permit #	Assisted in Identification of Current Owners/ Operators of Properties/Sites? (Y/N)	Provided Staff for Joint Inspections with Regional Water Board Inspectors? (Y/N)	Appeared to Testify as Witnesses in Regional Water Board Enforcement Hearings? (Y/N)	Provided Copies of Inspection Reports and Other 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 Annual Report for more information regarding IC/ID training.

During this reporting period, the Permittees trained 92 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. Camarillo currently has one QSP/CISEC and one QSD on staff.

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 an 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 Permittees maintained an electronic system to track grading permits, encroachment permits, and any other municipal authorization to move soil (or are in progress developing the system). (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 6-6.

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 6-7 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 92 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

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 MEP. 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.

The Permittees own and operate public facilities, and build and maintain much of the infrastructure of the urban and suburban environment throughout their jurisdictions. 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., Sewer line cleaning, catch basin cleaning, street repairs) 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 procedures that minimize pollutants generated and reduce 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 one Acre.

Performance Standard 7-1

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

Performance Standard 7-2

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

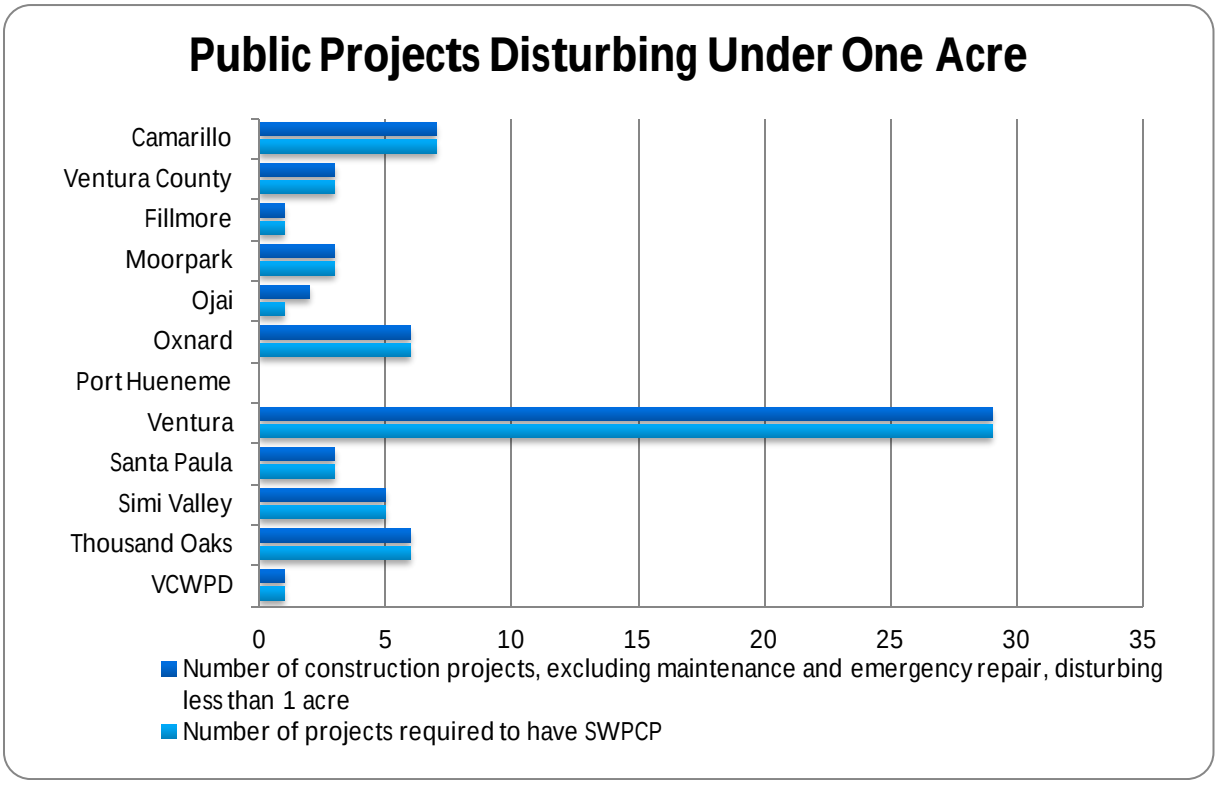
Grading or building permits are not routinely granted for public construction projects within an agency's jurisdiction, and so identifying and defining small construction projects is less straight forward. To ensure

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

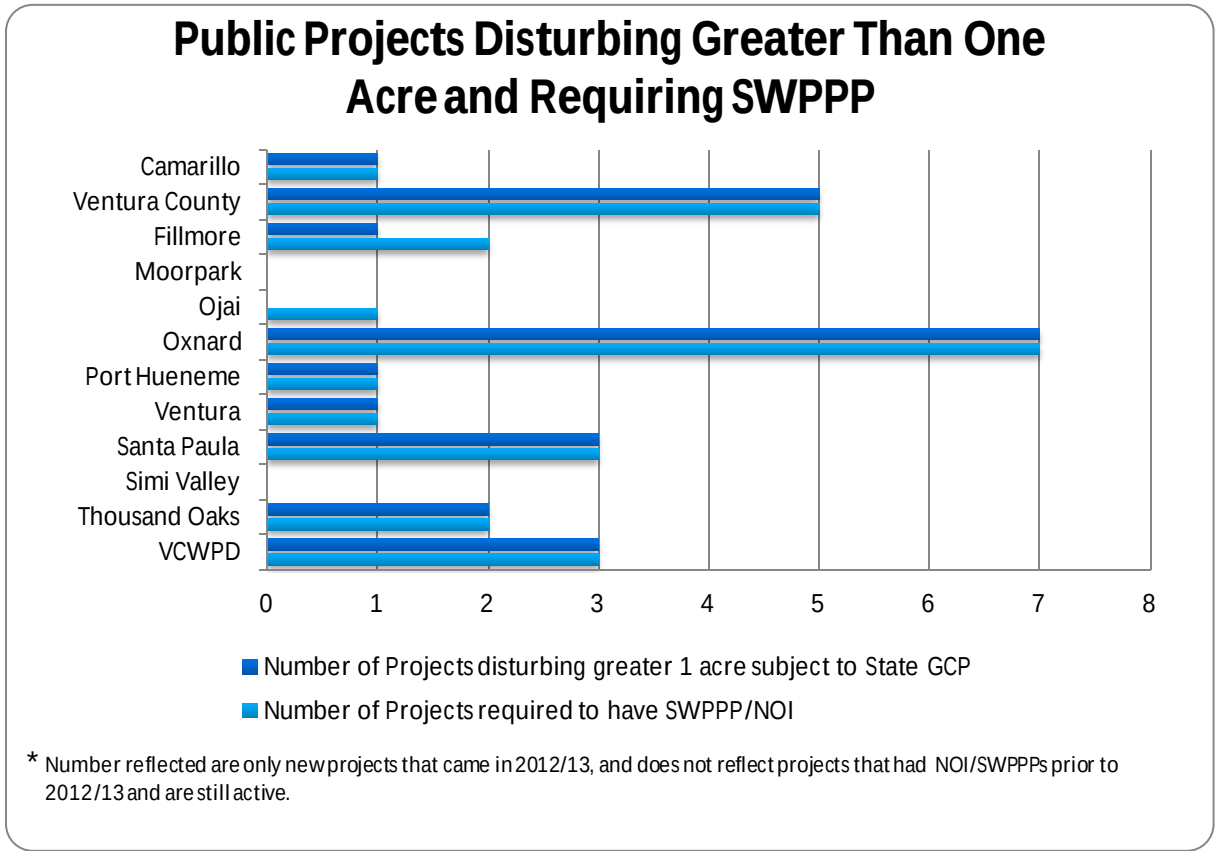
Require the development of a Storm Water Pollution Control Plan for public projects			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

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

Thousand Oaks' car wash facility drains to wastewater treatment plant

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.

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
- 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	R	R
County of Ventura	VCSO Air Unit	Camarillo Airport	R	R
	Moorpark Maintenance Yard	6767 Spring St., Moorpark, CA	R	R
	Saticoy Operation Yard	11251-B Riverbank Drive, Saticoy, CA	R	R
	6 Clinics and 2 Hospitals	Various	R	R
	Fire Stations	Various	R	R
Fillmore	Fillmore Public Works Yard	711 Sespe Avenue	R	R
Moorpark	Moorpark Public Corporate Yard	627 Fitch Avenue, Moorpark, CA 93021	R	R
	Moorpark Police Services Center	610 Spring Road, Moorpark, CA 93021	R	R
Ojai	Public Works Maintenance Yard	408 S. Signal St. Ojai, CA 93023	R	R
Oxnard	Oxnard Corporation Yard	1060 Pacific Avenue	R	R
	Regional Recycling Center	111 S. Del Norte Blvd	R	R
	Oxnard POTW	6001 S. Perkins Rd., Oxnard, CA	R	R
	Oxnard Water Campus	251 S. Hayes Avenue	R	R
Port Hueneme	Public Works Surfside Yard	700B E. Port Hueneme Rd.	R	R
	Public Works Industrial Yard	746 Industrial Avenue	R	R
Ventura	City of Ventura Public Works Corp	336 SanJon Road	R	R
Santa Paula	Corporation Street Yard	903 Corporation Street	R	R
	Water Yard	180 South Palm Avenue	R	R
Simi Valley	Simi Valley Police Department	3901 Alamo St, Simi Valley CA	R	R
	Simi Public Service Center	490 West Los Angeles Ave	R	R
Thousand Oaks	Municipal Service Center	1993 Rancho Conejo Blvd., Newbury Park, CA	R	R
VCWPD	Moorpark Maintenance Yard	6767 Spring Rd, Moorpark, CA 93021	R	R
	Saticoy Maintenance Yard	11251-B River Bank, Ventura, CA 93004	R	R

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 with 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 minimized. The control measure includes 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 the use. 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai		R	
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula			R
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

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

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 of the protocol, and supervision of pesticide applicators.

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

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 while reducing the discharge of pollutants. 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.

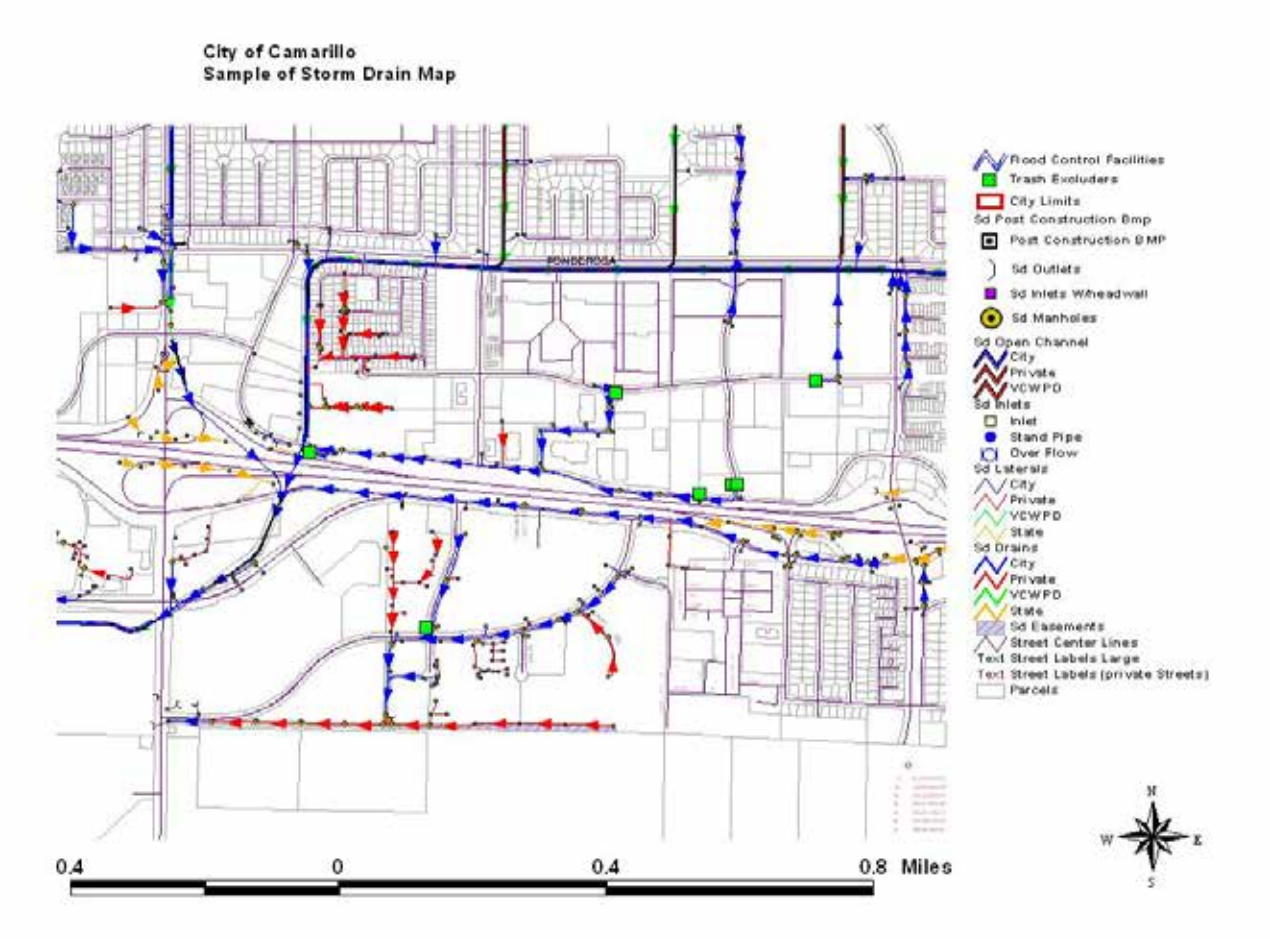
7.7.1 Implement Storm Drain System Mapping

The Permit requires 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 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. All maps will be incorporated into the Principal Permittee's Watershed Protection District GIS system as best as possible. This incorporation will allow for most 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai			
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula			R
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection			N/A

Figure 7-3 Example of Storm Drain Map



7.7.2 Implement Catch Basin Maintenance Program

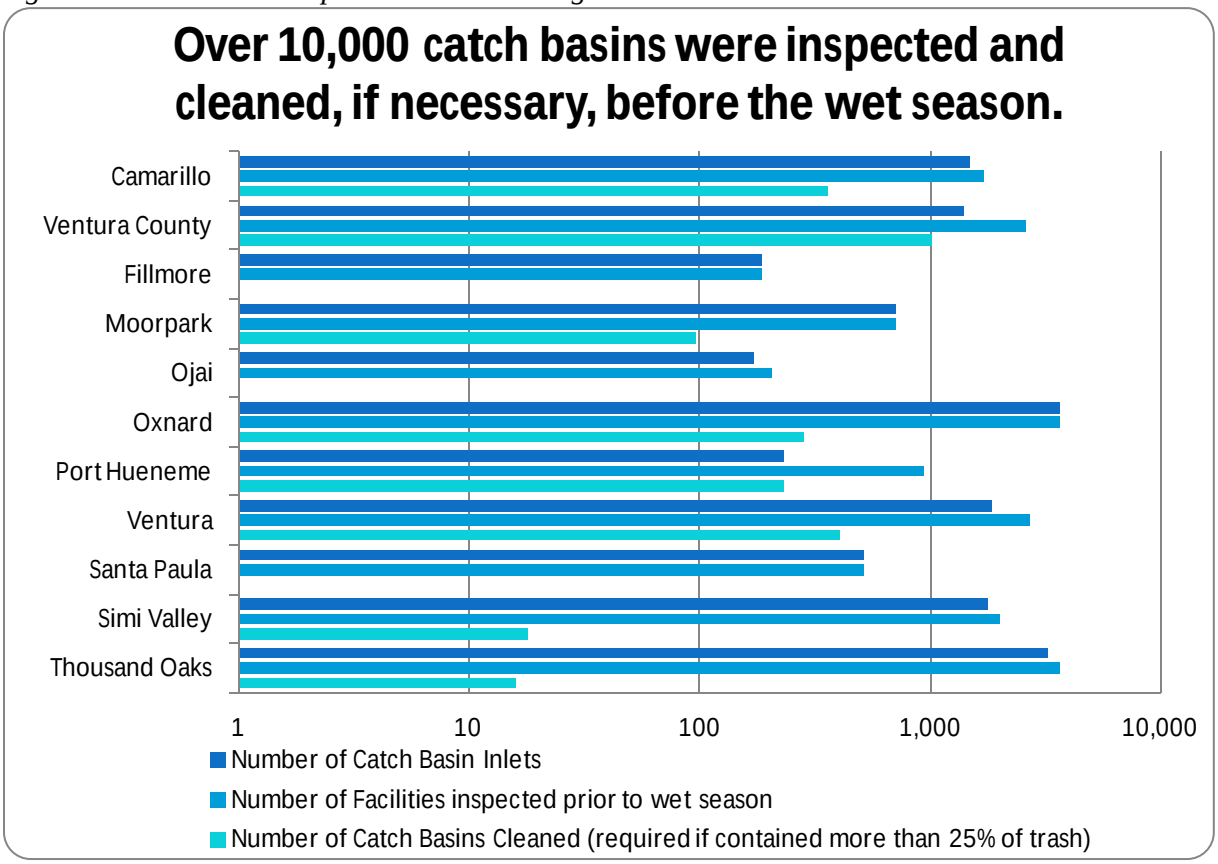
The Permittees are implementing catch basin cleaning schedules based upon the prioritization designations as required by the Permit. The requirement of a list or map of catch basins with their GPS coordinates and their prioritization designation was due July 8 2011. Figure 7-4 through Figure 7-7 shows the Permittees' efforts on prioritization, inspection, and maintenance.

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

Figure 7-4 Catch Basin Inspections and Cleaning



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.

Catch Basin Cleaning Using a Vacuum Truck

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

Figure 7-5 Priority A Catch Basins Inspected and Cleaned

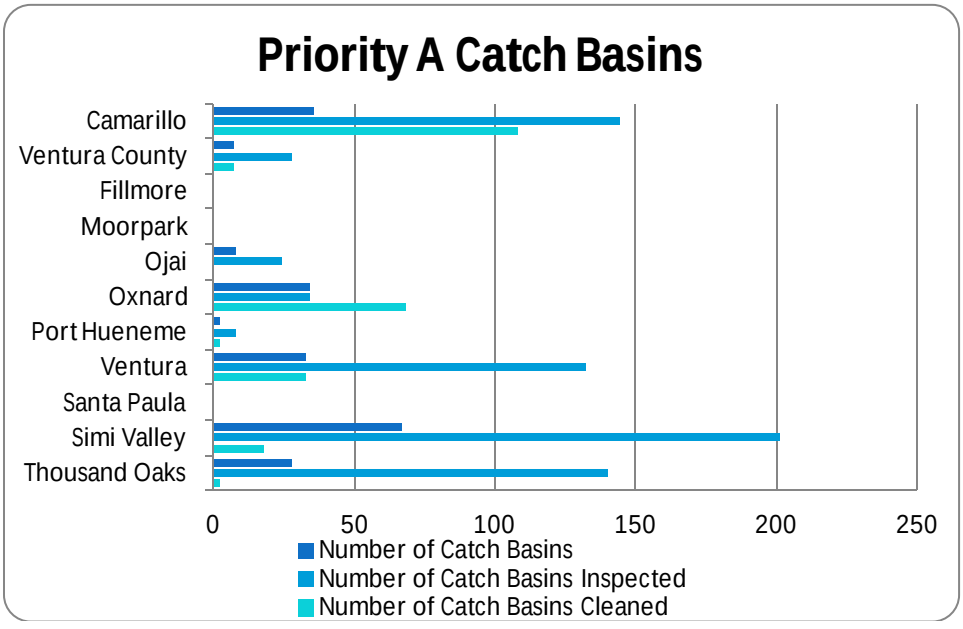


Figure 7-6 Priority B Catch Basins Inspected and Cleaned

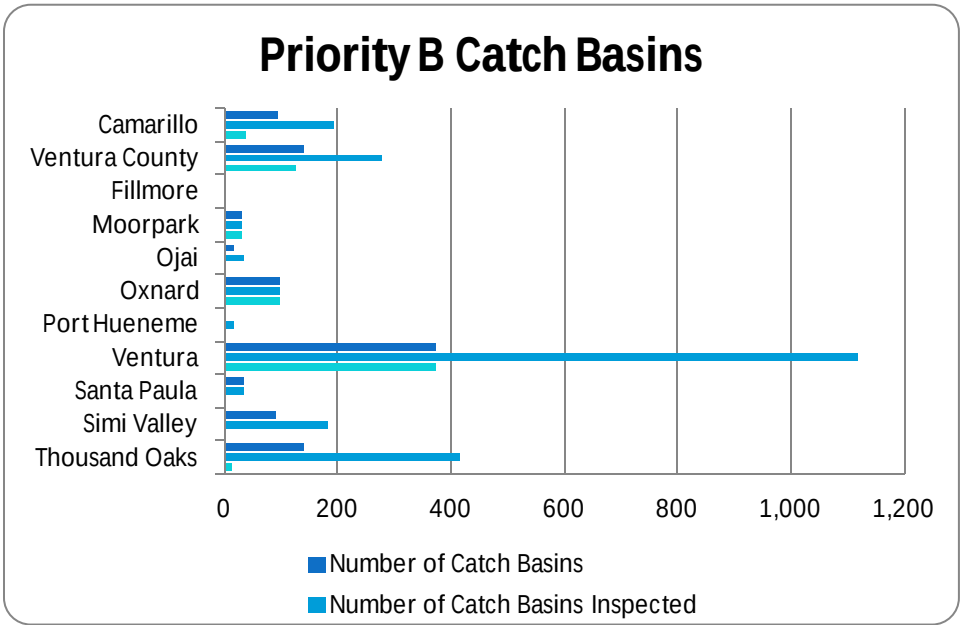
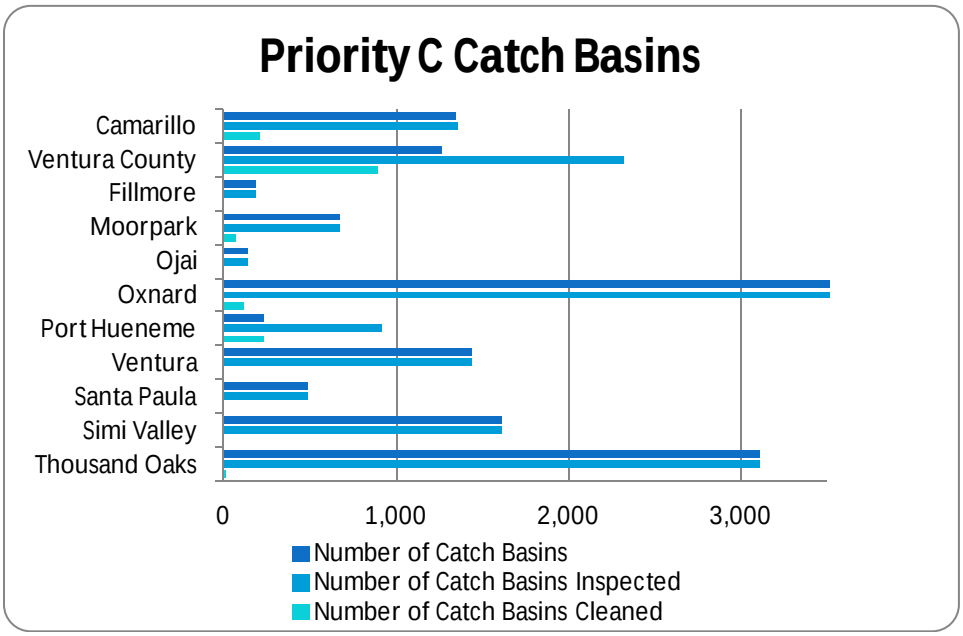


Figure 7-7 Priority C Catch Basins Inspected and Cleaned



7.7.3 Install Trash Receptacles

Permittees have identified 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.

Trash excluders ready for installation

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

Performance Standard 7-10

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

7.7.4 Install Additional Trash Management Devices and Programs

The Permittees have finished the implementation of this performance standard which was due July 8, 2012. 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:

Camarillo - Camarillo prioritized the catch basins based on field crew knowledge and maintenance records. If a catch basin was found to have 25% or more debris for more than 2 years in a row, its ranking is elevated to the next priority level, requiring a more frequent inspection and cleaning schedule and possible installation of a full capture trash device.

Camarillo installed trash receptacles at the city's bus stop areas which are typically located in commercial areas and near schools. In addition trash containers were also installed at entrances to city-maintained trails and the city's park.

In addition, via landscape contractors, Camarillo conducts regular trash abatement of all city maintained landscaped areas which includes parkways and medians along all city roads. Further, we conduct monthly "fence line" trash abatement in the higher trash areas within the Revolon Slough/Beardsley Wash subwatershed, which is under a trash TMDL. Also, via California Coastal Cleanup Day, the City held cleanups at two locations in which over 200 volunteers removed approximately 800 lbs. of trash and recyclables. The City also publishes articles in our local newsletter, Cityscene, such as the attached May/June 2013 article, "Protect Calleguas Creek - Stash Your Trash", which is mailed to all city residents.

County of Ventura – Equivalent trash capturing devices installed in Priority A catch basins;

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.

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

Hard workina trash excluder

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.

The 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, 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/vaccuum 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 conducted a review of all the storm drains identified as priority A and will be submitting a request for proposal to retrofit those drains with trash excluders.

Port Hueneme - Street sweeping goes beyond permit requirements. Solid Waste performs regular trash audits and adjust frequency of pick-up if necessary. Port Hueneme and Oxnard provide joint effort for cleaning trash from Oxnard West Drain throughout the year.The City's main outfalls are all protected with trash screening devices at their discharge points. One facility is the County Flood Control and Trash Removal Facility located at the end of Bubbling Springs at J Street canal. City's Seaview Flood Control Station has screened inlets and the well is cleaned quarterly or as needed during the wet season. The third outlet on the Oxnard West Drain has three floating trash booms and a Fresh Creek device installed prior to entering the Channel Islands Harbor.

Santa Paula – The City identified the following high trash areas: pedestrian high traffic areas; restaurant concentration areas; and special events. The City increased the number of trash receptacles in public areas prone to high amount of trash, and increased trash pickup to weekly or bi-weekly in public areas prone to high amount of trash.

Simi Valley - The City of Simi Valley's Public Works Environmental Compliance staff, working with the Streets Division, has identified high trash areas throughout the City. The City has purchased trash excluders and trash/recycling bins, which have been installed in these areas. The City had installed 62 trash excluders, however five needed to be removed due to flooding issues.

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. In addittion to regular cleaning and clearing, all MSC catch basins include the use of filters.

Ventura - High trash areas have trash excluders installed in catch basins. Additional trash receptacles have also been installed in those areas. The City of Ventura has located approximately 100 trash recepticals in convenient, well traveled public places. The City has currently purchased 30 BIG Belly Trash Receptical/Compactors for the replacement of, or to subsidize, those already in use. Trash excluders were installed in all Priority A catch basins in addition to trash receptacles.

Performance Standard 7-11

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

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 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 - Encroachment Permits are issued for activities within the road right-of way and require that trash be removed.

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, reservations and field assessment by staff.

The 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 also pay for staff or to have a volunteer force to clean trash during events. The public works department also provides additional manpower to 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 (TUP) 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 - Placed conditions in Special Use Permits requiring additional trash receptacles. The City also handles management and removal of trash during events. Post event inspections are also conducted of all nearby catch basins following events.

Santa Paula – The City increased number of trash receptacles in public areas prone to high amount of trash. City scheduled trash pickup immediately following public events.

Simi Valley – The City 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. Requirements of the trash management plan are to provide proper management of trash and litter generated by providing sufficient trash receptacles to accommodate the anticipated number of participants. The trash receptacles must be emptied and removed within 24 hours of the conclusion of the event. The event organizers are also required to install and maintain temporary screens on all catch basins within the event area. Specific instructions, with photos, are provided to the event coordinators.

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.

Ventura - Trash excluders have been installed in non-Priority A catch basins in our heavily used downtown district. These excluders catch trash during normal day-to-day usage in addition to frequent downtown events.

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.

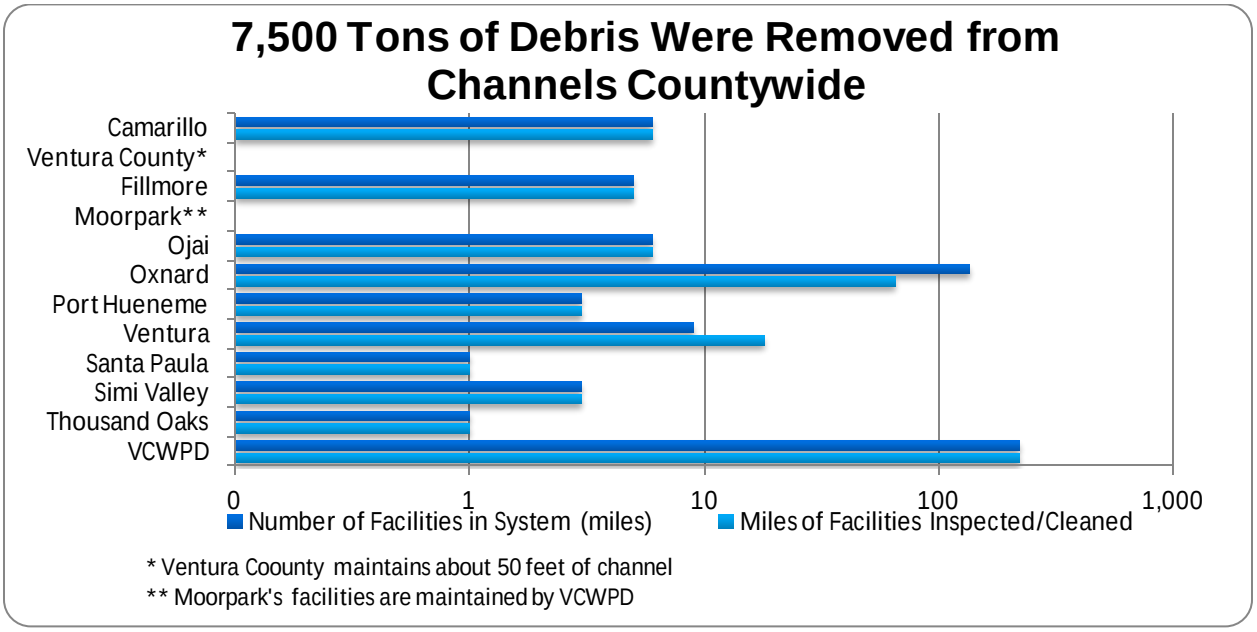
The Public Information and Participation section requires Permittees to have completed labeling or marking the curb inlets in their entire storm drain system, but the inspection and relabeling is required under Public Agencies. During the reporting period, some Permittees maintained their inlet signs by reapplying stencils/markers as they wear 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		

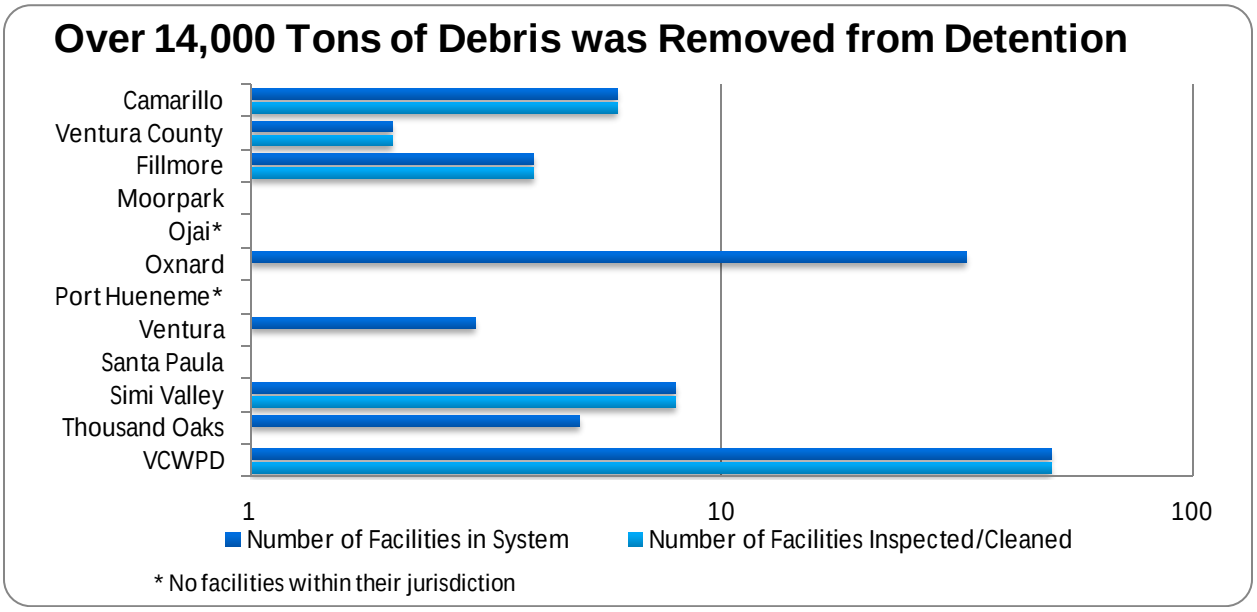
Signs at curb inlets have varying useful lives due to the materials from which they are constructed (e.g., paint or thermoplastic), their position (e.g., on top of curb or on curb face), and wear factors (e.g., traffic, street sweeping, sunlight). As a result, the Permittees have different programs to 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 7,500 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 will happen and needs 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 private developments 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;
- Applied to the land without runoff;
- 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

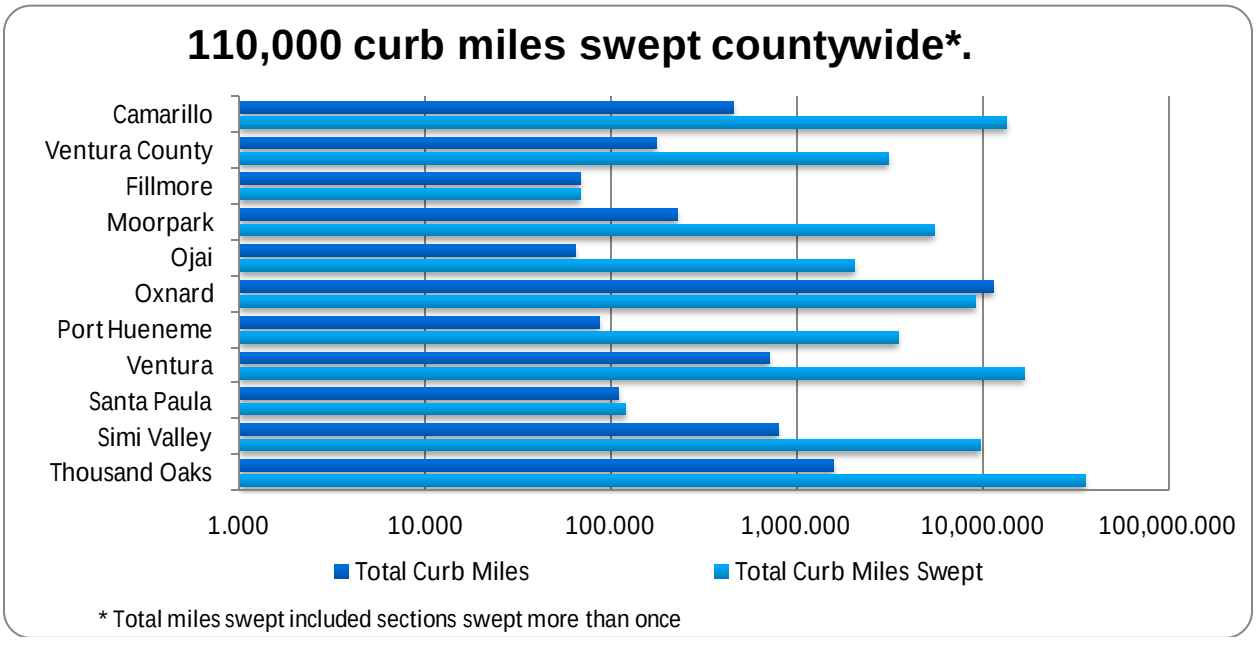
Permittees have identified curbed streets within their jurisdiction and have implemented a sweeping program for these streets. In many cases the frequency of street sweeping is beyond the Permit requirement of at least twice a month for commercial areas and areas subject to high trash generation.

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

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

7.9 EMERGENCY PROCEDURES – PA7

The Emergency Procedures Control Measure 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 were no emergency that caused a Permittee to invoke Emergency Procedures Self-Waiver. Any uses of the self-waivers would have been reported here.

Table 7-3 Summary of Emergency Procedures

Summary of Emergency Procedures		
Permittee	**Date Emergency Procedures invoked**	**Description**
N/A	N/A	No emergencies required self-waivers

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

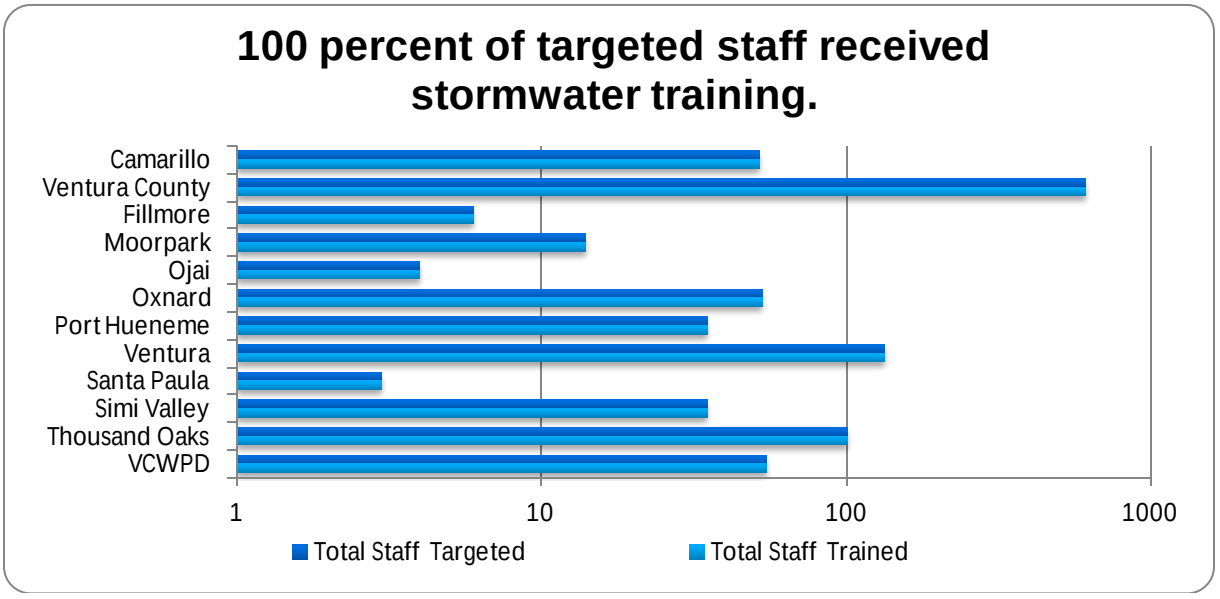
Performance Standard 7-16

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

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 7-17

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

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. · 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 · Proper use, handling, and disposal of pesticides · Least toxic methods of pest prevention and control, including IPM · 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 public construction projects since they are not granted for public construction projects. Instead, all Permittees have effectively required small public projects to follow 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 from their operations 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

All of the Permittees have implemented an 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 2,000 catch basins were cleaned during the Annual Reporting period. (L1) The Permittees have completed the process of designating and reporting debris removal by prioritization. During 2012/13, Permittees collectively removed more than 454 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. Their actions range from installing no littering signs (L2), ensuring sufficient trash collection containers in public spaces (L4), and prioritizing catch basins and installing trash capturing devices, trash booms, and using landscape contractors to remove trash from public areas.(L4)

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 7,500 tons of debris from channels and ditches and 14,500 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

No Permittees 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 1,100 staff members 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/ID to the MS4. Key components of these programs are public reporting, field screening, incidence response, and enforcement actions.

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 stormwater pollution problem. However, through the efforts of public education, business inspection, construction inspection, and illicit discharge response the preventable acts of willfully using the storm drain system to dispose of waste will continue to be reduced.

Illicit connections, while 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 and Reporting 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.

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

- Public education materials (see Section 3: Public Outreach)
- Industrial and commercial facility site visits (see Section 4: Industrial/Commercial Facilities Program)
- Drainage facility inspection (see Section 5: Public Agency Activities)
- Construction inspections and BMP implementation (see Section 6: Development Construction)
- Water quality monitoring (see Section 9: Monitoring and Reporting Program)

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

8.3.1 Public Reporting

The Public Outreach Program control measure both helps prevent illicit discharges from occurring and educates the public when discharges should be reported. Very early in the Stormwater Program the public became aware of what was not allowed down storm drains, and reports of IC/ID increased rapidly; this trend reversed as behavior changed, and for last several years reports of IC/ID have demonstrated a

leveling off. Since the public is more aware of IC/ID the decrease likely represents a change in behavior and fewer pollutants reaching the storm drains.

Since the public are the eyes of the IC/ID program, most 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) 517-6248
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). 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 effective 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 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 list of hotlines is 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 require them initiate any cleanup to reduce pollutants from the 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	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai		R	
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

Performance Standard 8-2

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

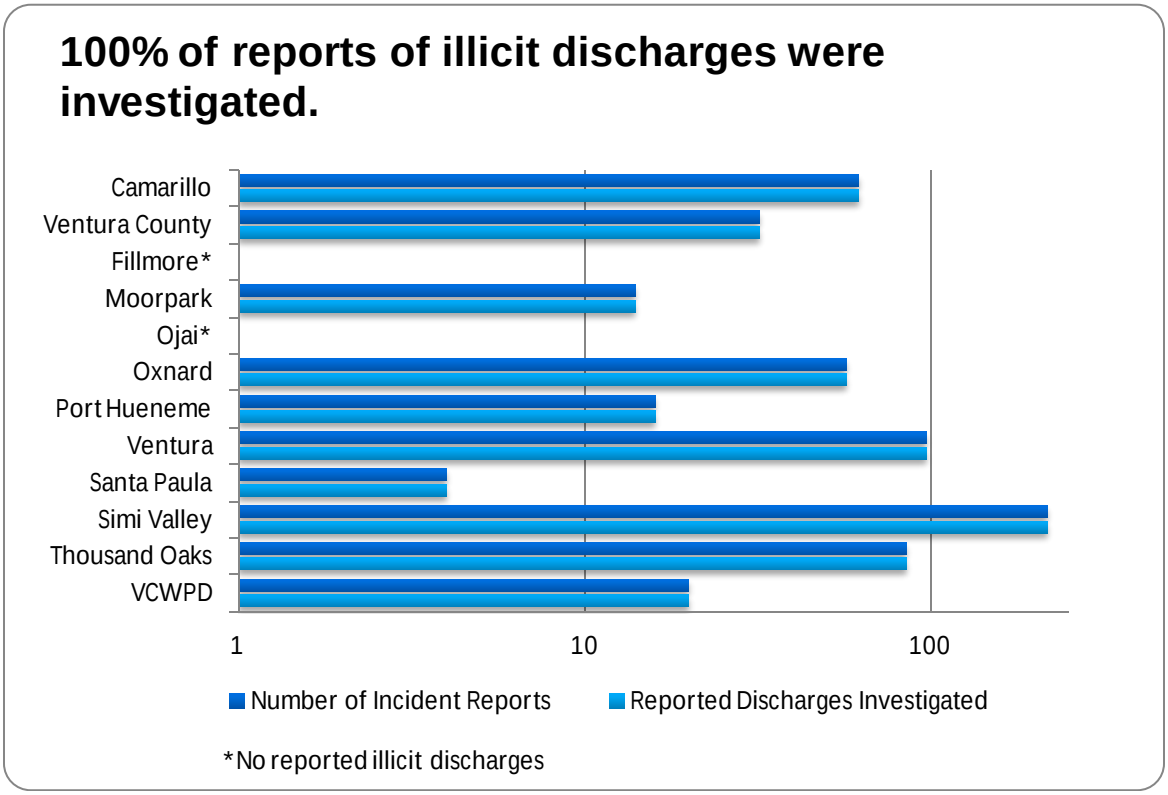
Performance Standard 8-3

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

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.

Mobile carwash caught by an inspector

Figure 8-1 Illicit Discharge Investigations



8.3.4 IC/ID Tracking

Tracking the location of illicit connections and illicit discharges, 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	R	☐	☐
Ventura County	R	☐	☐
Fillmore	R	☐	☐
Moorpark	R	☐	☐
Ojai		☐	R
Oxnard	R	☐	☐
Port Hueneme	R	☐	☐
Ventura	R	☐	☐
Santa Paula	R	☐	☐
Simi Valley	R	☐	☐
Thousand Oaks	R	☐	☐
Watershed Protection	R	☐	☐

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 lacking 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 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 connections in the field

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.

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. Figures 8-2 and 8-3 show 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 are high in activity and have high visibility, meaning a high chance of being reported by residents, or neighboring businesses. Overall the mapping exercise confirmed the Permittees understanding. The Permittees have learned through experience which areas have problems with illicit discharges, and have developed strong inspection programs to prevent them.

Figure 8-2 Illicit Discharge by Land Use

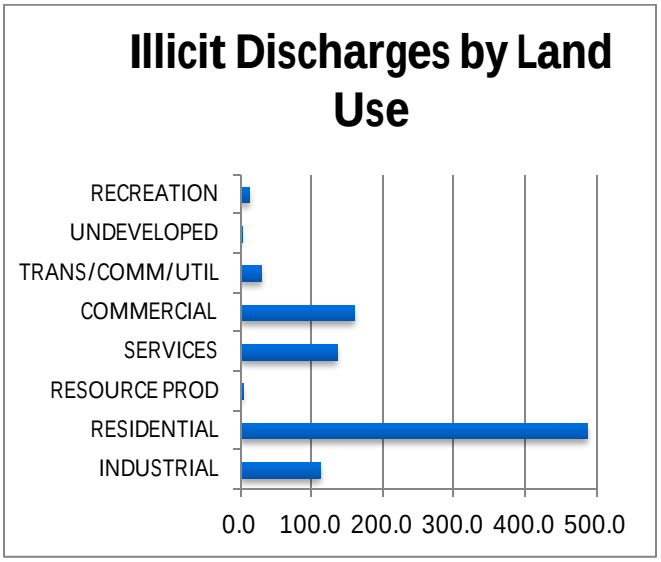
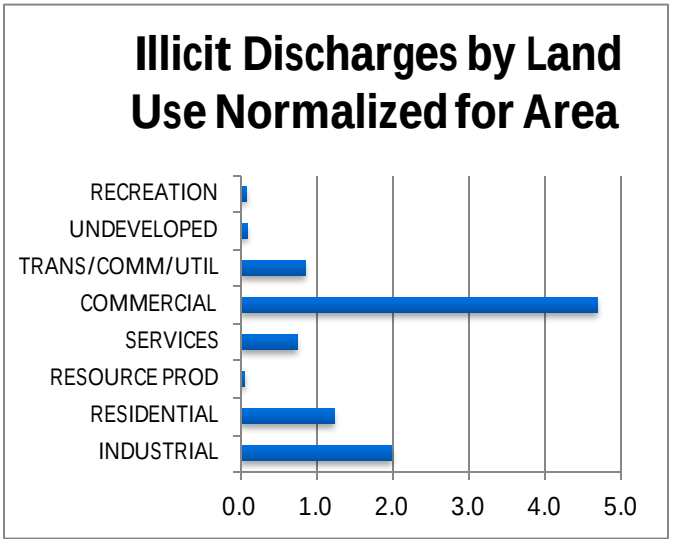


Figure 8-3 Illicit Discharges by Land Use Normalized for Area



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:

- Identify dry weather flows.
- Investigate and determine the origin and nature of the discharge when connections to the storm drain system are suspected or observed to be from an illicit connection or 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	R	☐	☐
Ventura County	R	☐	☐
Fillmore	R	☐	☐
Moorpark	R	☐	☐
Ojai	R	☐	☐
Oxnard	R	☐	☐
Port Hueneme	R	☐	☐
Ventura	R	☐	☐
Santa Paula	R	☐	☐
Simi Valley	R	☐	☐
Thousand Oaks	R	☐	☐
Watershed Protection	R	☐	☐

Performance Standard 8-6

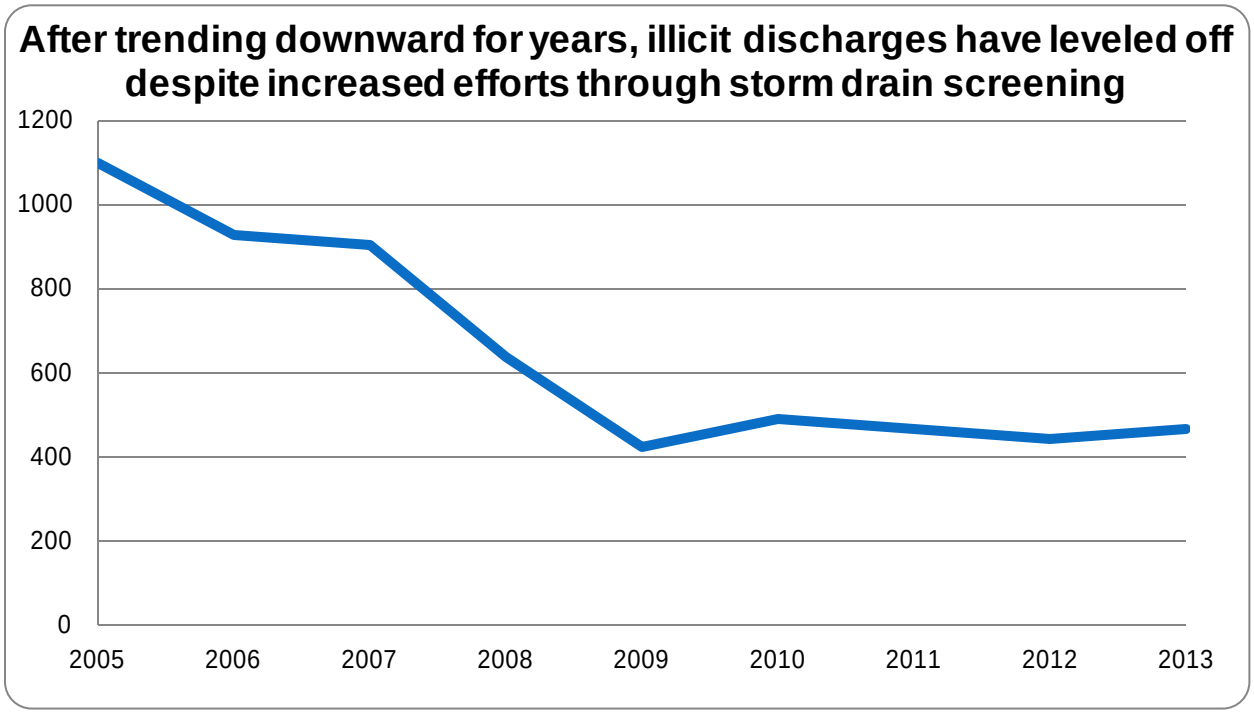
Submit to the Principal permitted a map of all portions of the storm drain system consisting of pipes 36 inches in diameter or greater in a uniform format			
	Yes	No	In Progress
Camarillo	R		
Ventura County	R		
Fillmore		R	
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R	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

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

To assist in screening for illicit connections, the Permittees have mapped channels within their permitted area and storm drain system. These maps were transmitted to the Principal Permittee and have been 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 were completed by May 7, 2012, and those 18 inches or greater will be completed by May 7, 2014.

Figure 8-4 Illicit Discharge Trends



Field Screening

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

Individually, the Permittees efforts may be beyond Permit requirements and offer some valuable lessons learned:

- Although Camarillo screened all portions of the storm drain system in 2012 and did not find any significant issues, in the later part of this Permit year, we initiated a special screening of the Camarillo Hills Drain upstream of the urban outfall monitoring location to investigate the dry weather runoff that occurs in this channel. The investigation will continue in the next Permit year to determine the source(s) of this runoff.

- City of Moorpark staff monitored all 36 inches or greater outfalls along the Arroyo Simi.

- Oxnard's Technical Services Program-Stormwater staff completed field screening of all 36" pipes or greater in a previous reporting year. TSP-SW staff conducted outfall reconnaissance inventory of all applicable manholes at locations immediately upstream of the outfalls that discharge into VCWPD open channels. TSP -SW staff also walked all City owned open channels to conduct field screening and to look for illicit connections.

- Port Hueneme staff performed CCTV inspection by means of a pole mounted camera throughout the entire city system. Staff is currently compiling a priority list of projects for further action absed on the CCTV inspection data.

- Simi Valley Environmental Compliance Inspectors respond to complaints and tips from residents and other City divisions, which have been trained to recognize possible illicit discharges and connections. Inspectors investigate the illicit discharge/connection, determine if it is an illicit discharge or connection, locate the source whenever possible, and make sure the discharge is stopped or the connection eliminated. Education is provided to the responsible party and best management practices discussed whenever appropriate.

- The City of Ventura has continued its outreach to the community by participating at public events, increasing business inspections, illicit discharge investigations and our school outreach program. Any illicit discharge reported to the hotline is followed up on, eliminated, and

abatement ordered. Educational information is distributed whenever possible. Follow-up inspections are performed to verify clean up. The number of reported dry weather illicit discharges has decreased this year by 18%.

Performance Standard 8-8

Screening of all high priority areas identified during the mapping of illicit connections and discharges			
	Yes	No	In Progress
Camarillo	R		
Ventura County	R		
Fillmore		R	
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula			R
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

Performance Standard 8-9

Screening of all portions of the storm drain system 50 years of age or older			
	Yes	No	In Progress
Camarillo	R		
Ventura County	R		
Fillmore		R	
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula			R
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

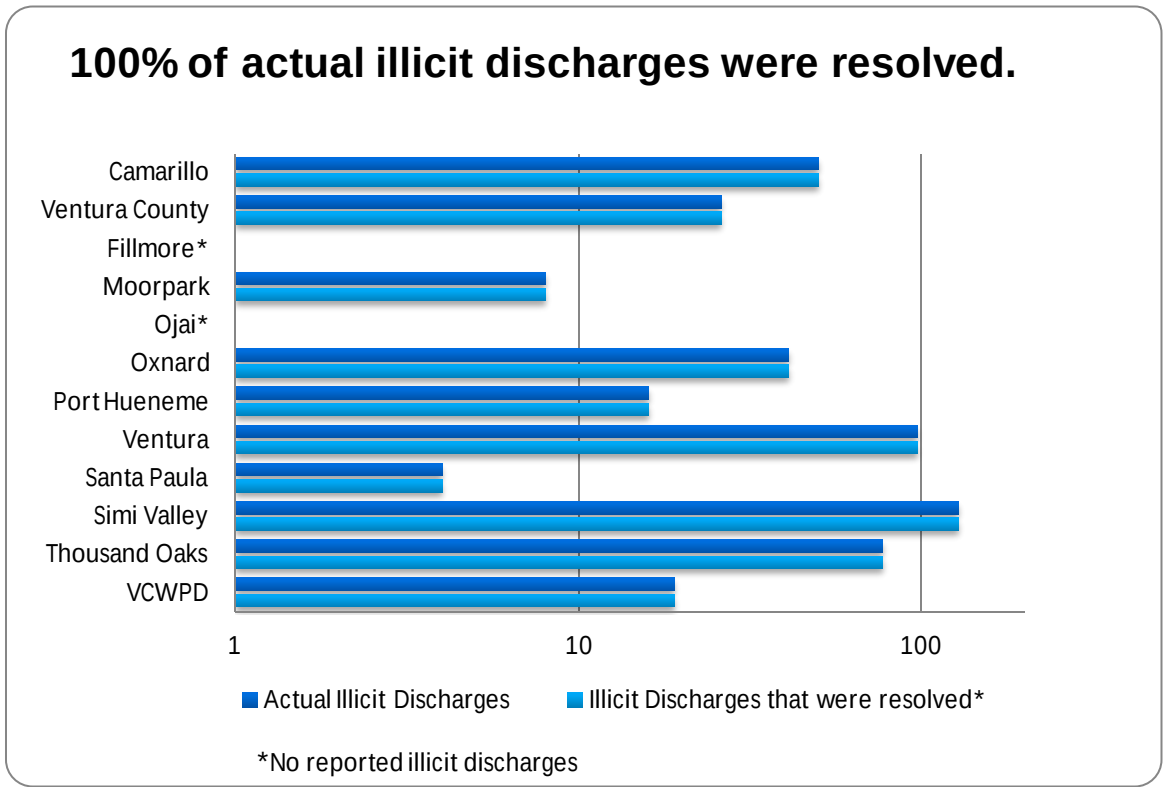
8.4 ILLICIT DISCHARGE/CONNECTION INVESTIGATION AND ELIMINATION – ID2

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:

- Provide educational materials and contact numbers for reporting illicit discharge/dumping when conducting stormwater inspections.

- 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;

Figure 8-5Resolved Illicit Discharges



Performance Standard 8-10

Respond within one business day or discovery or report of a suspected illicit discharge and abate, contain, and/or cleanup the discharge			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

Performance Standard 8-11

Investigate illicit discharges during or immediately following containment and cleanup activities			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

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.

The Permit requires each Permittee, no later than July of 2012, that its Storm Water Quality Ordinance authorizes the Permittee 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. The Permittees, led by the City of Moorpark, have been 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. Several of the Permittees have updated their existing ordinances or written entirely new ones.

Performance Standard 8-12

Take appropriate enforcement action to eliminate the illicit discharge			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai			R
Oxnard	R		
Port Hueneme	R		
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

Table 8-3 Ordinance Adoption Dates

Ordinance Adoption Dates		
Permittee	**Adopted Date**	**Amendment Date**
Camarillo	3/11/1998	12/12/2012
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	6/30/2014
Santa Paula	11/16/1998	2010
Simi Valley	7/2/2012	
Thousand Oaks	10/14/1999	

Performance Standard 8-13

Legal authority to prevent and remove illicit connections and illicit discharges	
	Adopted Date
Camarillo	3/25/1998
Ventura County	7/22/1997
Fillmore	12/8/1998
Moorpark	12/3/1997
Ojai	2/9/1999
Oxnard	3/24/1998
Port Hueneme	2/1/2001
Ventura	1/11/1999
Santa Paula	11/16/1998
Simi Valley	4/22/2002
Thousand Oaks	9/14/1999

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 procedures, or if determined to be an illicit connection use enforcement actions to pursue removal of those connections.

Performance Standard 8-14

Maintain a list of all connections under investigation for possible illicit connection and their status			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula		R	
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

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 and fewer actual illicit connections that need to be terminated. Countywide, of the ten possible illicit connections only seven were identified as actual unpermitted illicit connections, and all seven 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 8-15

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

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 8-16

Terminate the connection using formal enforcement within 180 days of completion of the investigation			
	Yes	No	In Progress
Camarillo	R		
Ventura County	R		
Fillmore		R	
Moorpark	R		
Ojai		R	
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula		R	
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

Performance Standard 8-17

Keep records of all illicit connection investigations and formal actions taken to eliminate all illicit connections			
	Yes	No	N/A
Camarillo	R		
Ventura County	R		
Fillmore	R		
Moorpark	R		
Ojai	R		
Oxnard	R		
Port Hueneme			R
Ventura	R		
Santa Paula	R		
Simi Valley	R		
Thousand Oaks	R		
Watershed Protection	R		

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.

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.

8.4.3 Response to Illicit Discharges

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,
- Direct any cleanup necessary to eliminate the discharge of pollutants, 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.

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.

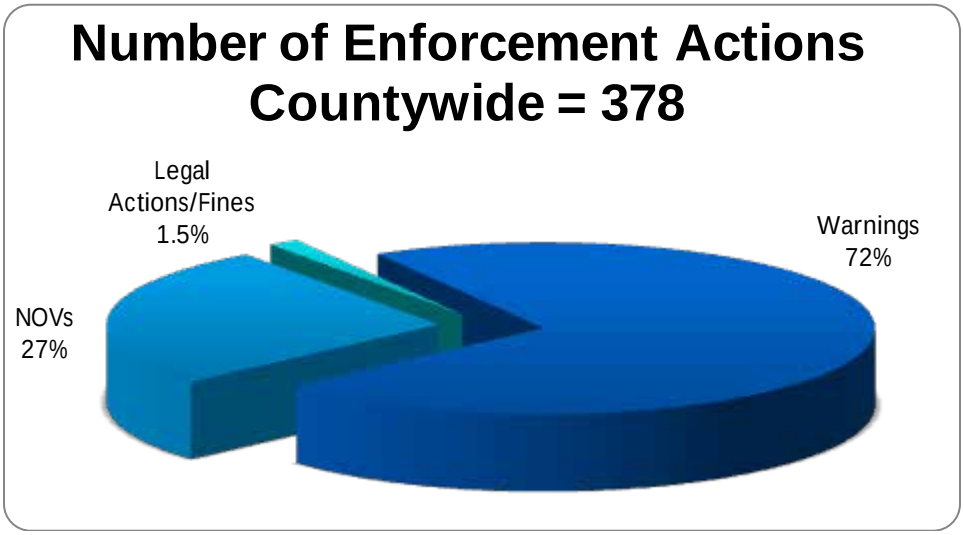
The discovery of potential or likely illicit discharges through business inspections has worked to reduce the number of overall illicit discharges.

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 on site civil citations of $100

Figure 8-6 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 fourth time perpetrators 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 8-7 Sources of Illicit Discharges

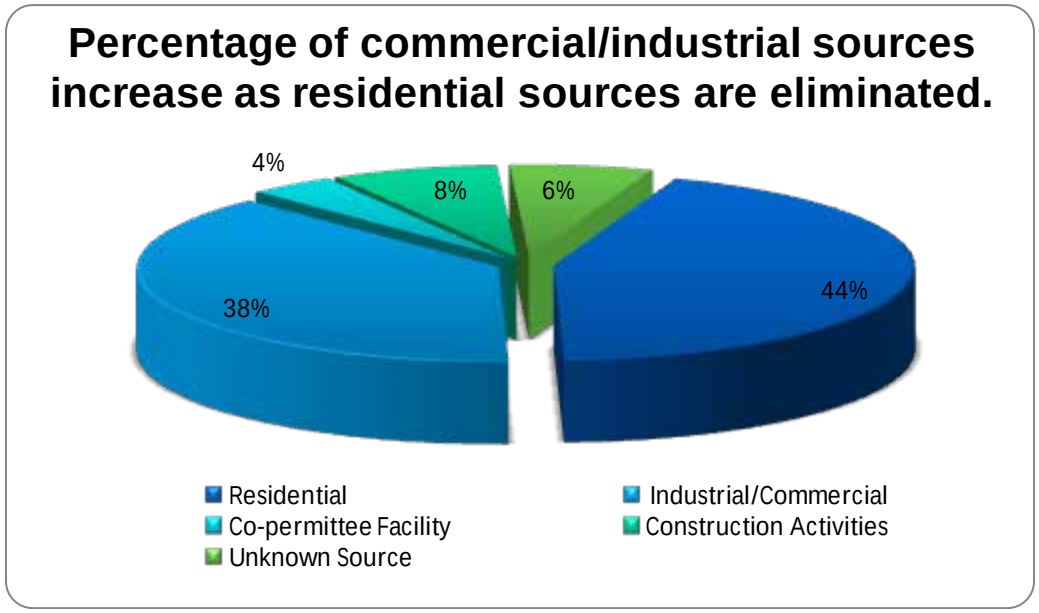


Figure 8-8 Illicit Discharges Incidents

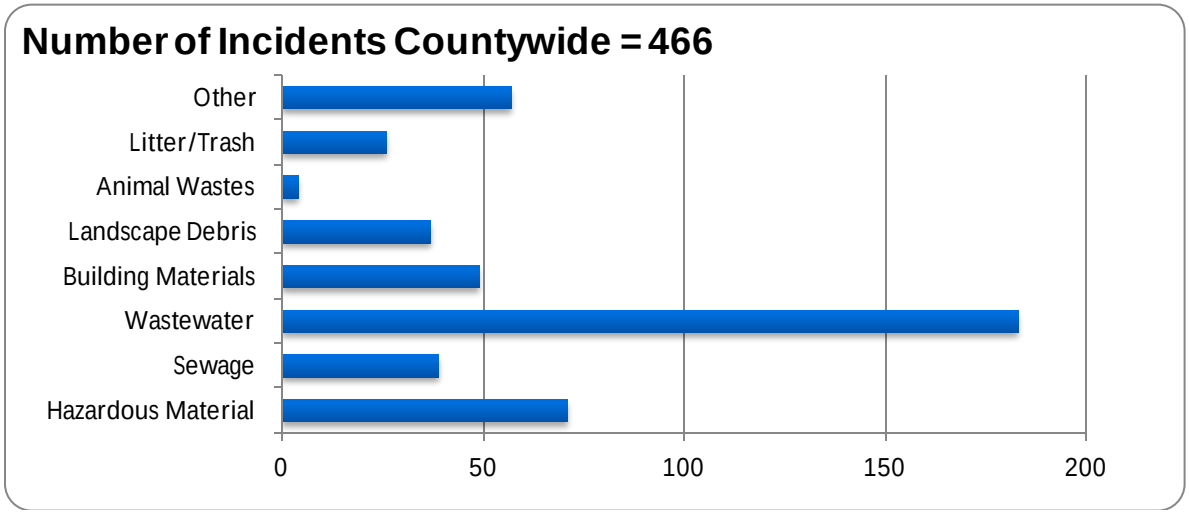
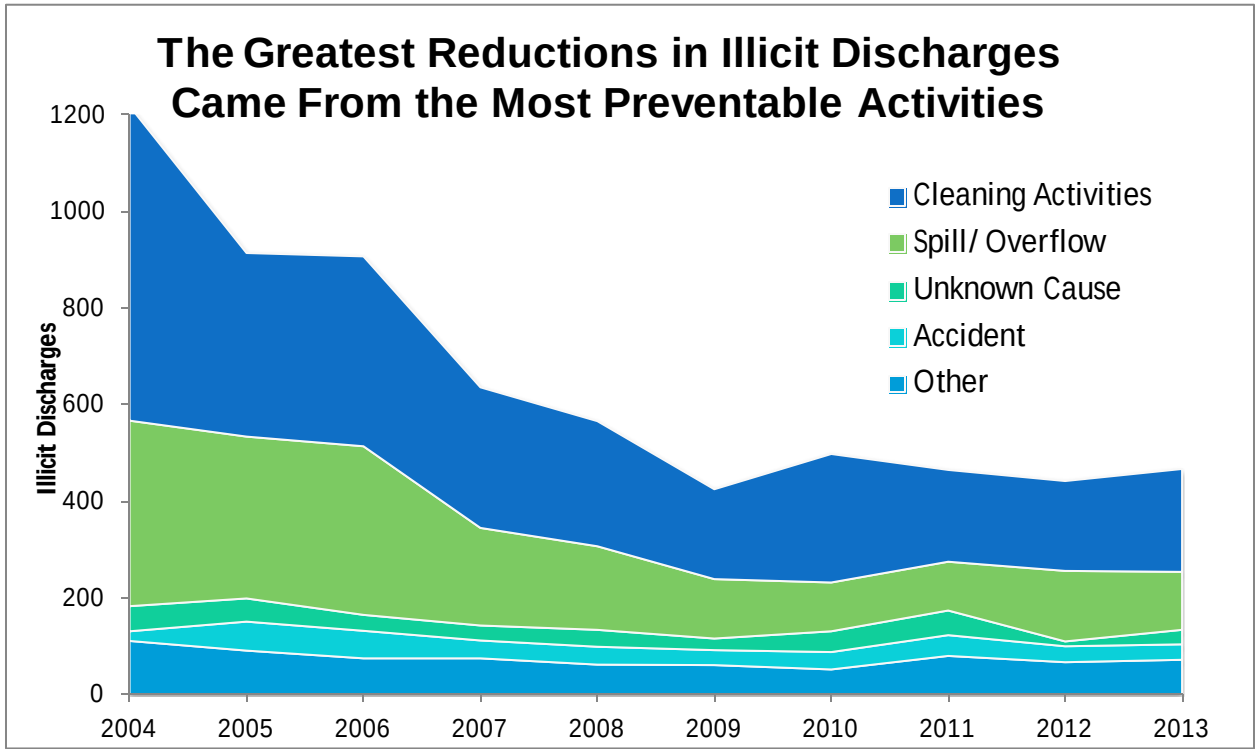


Figure 8-9Trends in Illicit Discharges



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:

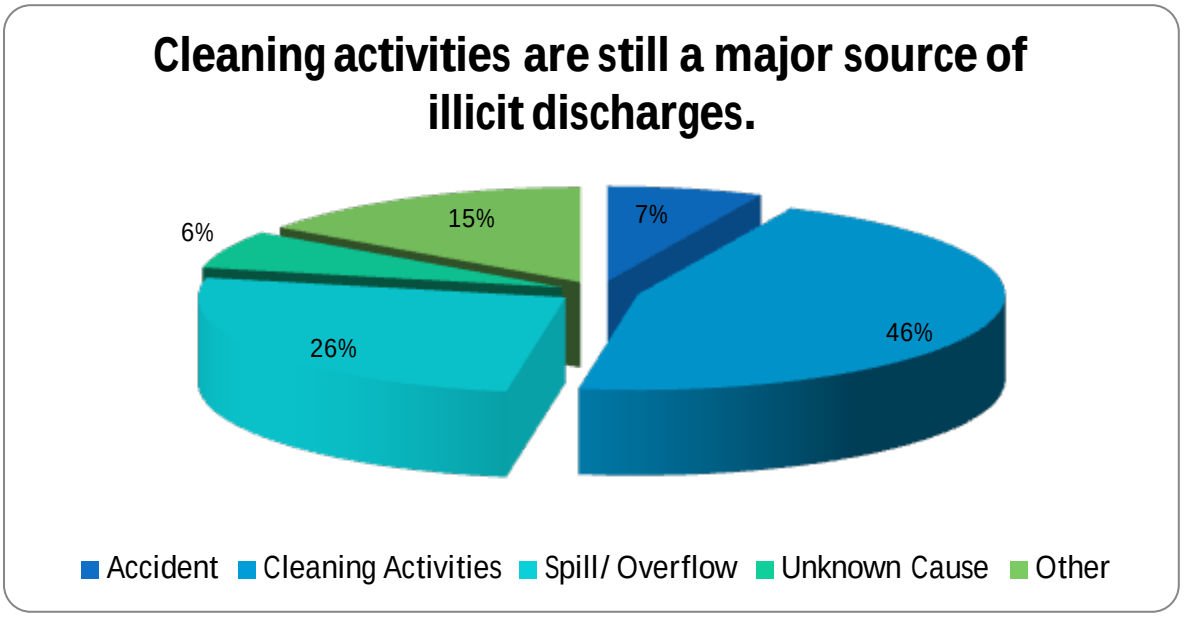
- Direct voluntary cleanup/termination;
- Initiate enforcement procedures;
- Take steps to prevent similar discharges from reoccurring.

When the source cannot be determined, the appropriate municipal department, or a contractor, will be notified to contain and clean up the material if possible. Because these situations and materials can vary, procedures vary as well. In general, the following steps 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 8-10 Activities Leading to 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 often evaluate the effectiveness 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, as well as field staff such as drainage, roadway, landscape, and facilities staff, industrial pretreatment inspectors, and code enforcement officers to help identify and report illicit discharges. 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 322 municipal staff on illicit discharge response and non-stormwater

discharges. The staff trained by the Permittees is presented in figure 8-10 and training program is outlined in Table 8-4

Figure 8-11 Illicit Discharge and Illicit Connection Training

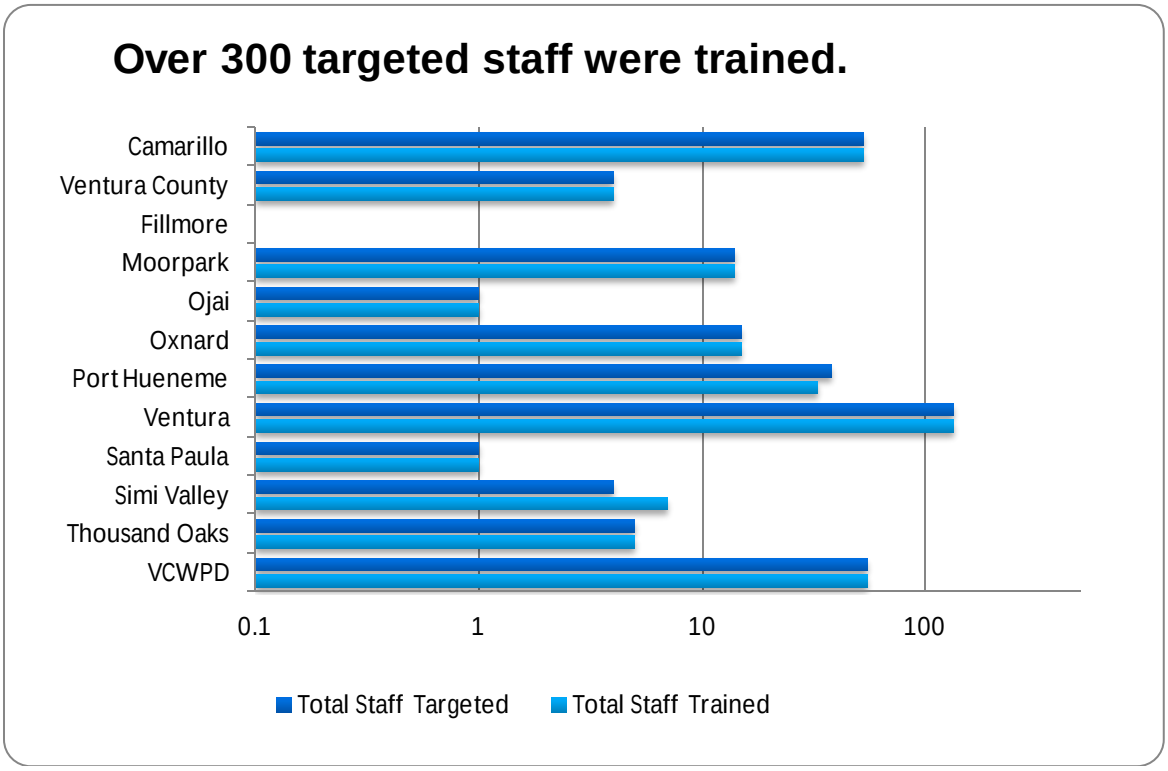


Table 8-4 Training Areas of Focus for the ID/IC Program Element

Target Audience	Format	Subject Material	Comments
· Illicit discharge inspectors · Drainage, roadway, landscape, and facilities staff · Industrial pretreatment inspectors · Code enforcement officers	· Classroom · On-site	· Identification · Investigation · Termination · Cleanup · Reporting of incidents · Documentation of incidents	· Subject varies by staff responsibility · 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. (L1)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 four years reports of IC/ID have demonstrated a leveling trend as shown in Figure 8-8. Since the public is more aware of IC/ID this likely represents a change in behavior for all but the willful violators and so 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 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 10 possible illicit connections 7 were identified as actual illicit connections, and all 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 adopted stormwater quality ordinances which more effectively and consistently ensure 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 94% 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"[2] 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)

8.6.3 Training

Conduct Training

The Permittees trained a total of 322 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 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.

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[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

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 2012/13 monitoring season. However, due to an unusually dry wet-season with few qualifying storms, the Program was not able to sample the required number of wet events at all stations.

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.

The 2012/13 water year was exceptionally dry in Ventura County. Most sites received less than half the rainfall of a normal water year making this one of the top six driest years on record for Ventura County. Few storms were forecast $\geq$ 0.25 inch and most of the storms reflected the forecasts. The lack of rain resulted in the Stormwater Monitoring Program targeting storms that barely met the 0.25 inch forecast requirement of the Permit, which resulted in two false starts and one event targeted, but with few sites meeting the Permit requirements for rainfall (ten sites received sufficient runoff to enable the sampling equipment and the collection of samples, however only three of these sites met the $\geq$ 0.15 inch Permit requirement for a qualifying storm). The samples collected at the seven sites with <0.15 inch of rain were analyzed, but are not qualifying events. Wildly varying, and inaccurate forecasts resulted in the Stormwater Program not targeting one qualifying storm that turned out to be wetter than anticipated by the National Weather Service, local commercial forecasters, and local experts.

Water chemistry samples were collected at Mass Emission and Major Outfall stations during up to three rainfall events, with each site sampled once per event, when possible. The sampled rain events occurred on October 11-12, 2012 (MO-OJA), November 17-18, 2012 (all sites), February 19-20, 2013 (ME-CC, MO-THO, and MO-HUE, with non-qualifying samples (<0.15 inch rainfall) collected at MO-CAM, ME-SCR, MO-FIL, MO-OXN, MO-SPA, MO-SIM, and MO-VEN), and March 7-9, 2013 (all sites). Samples were collected at Mass Emission and Major Outfall stations during one dry event which was split into three parts: April 22-23, 2013 (ME-SCR, MO-FIL, MO-OXN, and MO-VEN), April 29-30, 2013 (ME-VR2, MO-OJA, and MO-HUE),and May 22-23, 2013 (ME-CC, MO-CAM, MO-SIM, and MO-THO). Note: dry event samples were not collected at MO-SPA, MO-MEI, or MO-MPK due to lack of flow. Toxicity samples were collected during the first qualifying 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 12 and 13, 2013 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 97.1% success rate in meeting program data quality objectives.

The Ventura Countywide Stormwater Quality Management Program conducted comparisons of the California Toxics Rule (CTR) Numeric Criteria for Priority Toxic Pollutants, consistent with the new approach described in the 2011/12 Annual Report, to determine water quality exceedances in receiving waters. The driver for the change was the inconsistent application of acute and chronic criteria in the past. This approach provides more consistent protection of beneficial uses and is more consistent with how other stormwater agencies in southern California determine exceedances. The details and benefits of the new approach, and the implications for historical exceedances are discussed in this Annual Report.

Aluminum, *E. coli,* and fecal coliform were commonly found at elevated levels at most sites during wet-weather events. *E. coli,* and fecal coliform concentrations were also often elevated during dry-weather events, but aluminum concentrations were not. Other constituents that were found at elevated levels during the 2012/13 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event), dissolved oxygen, dissolved copper (dry season only), total arsenic, total selenium, total ammonia, bis(2-ethylhexyl)phthalate, methylene blue active substances (MBAS), and pH (predominantly dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and simazine. Constituents that were seen at elevated levels at Mass Emission stations only once during the season include 2,4-Dinitrotoluene and the metals (total) arsenic, beryllium, cadmium, chromium, nickel, and thallium. 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 seven days between June 6, 2013 and July 16, 2013.

The Ventura Countywide Stormwater Quality Management Program continued the comprehensive data analysis effort started in 2012, 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 Annual Report summarizes the effort undertaken by the Ventura Countywide Stormwater Quality Management Program (Program) and the Stormwater Monitoring Program during the 2012/13 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 9.6.1.

During the 2012/2013 monitoring season, water quality samples from three wet-weather events and one dry-weather event were targeted for water chemistry analysis at each Mass Emission station, as required by the NPDES Permit. Three events were successfully captured for ME-CC, however only two qualifying events were successfully captured for ME-SCR and ME-VR2, due to the dry water year. Aquatic toxicity samples were collected at each Mass Emission station during the first flush event for the 2012/13 monitoring year, Event 2 (November 17, 2012) 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 2012/13 monitoring season, water quality samples from three wet-weather events and one dry-weather event were targeted for water chemistry analysis at each of the eleven Major Outfall stations[3], as required by the NPDES Permit. The required number of wet events was successfully achieved for three of the eleven stations (MO-THO, MO-OJA, and MO-HUE). Three wet events were sampled for five of the eleven stations (MO-CAM, MO-FIL, MO-OXN, MO-SPA, MO-SIM, and MO-VEN), however below predicted rainfall during Event 3 resulted in non-qualifying samples (below the 0.15" threshold for sample analysis[4]). The remaining two stations were successfully sampled for two wet events, however a third qualifying event (forecast with sufficient notice, confidence, and accuracy) did not occur during the 2012/13 monitoring season (MO-MEI and MO-MPK). Aquatic toxicity samples were collected at each of the Major Outfall stations during the first flush (Event 1 at MO-OJA on October 11, 2012 and Event 2 for all other stations on November 17, 2012) 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. 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 pre-selected representative site if flow was insufficient at the Major Outfall station.

[3] MO-MEI, MO-SPA and MO-MPK which were not sampled during the dry weather event due to a lack of consistent flow.
[4] Samples were analyzed even though the rainfall was below the threshold required by the Permit.

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 (the fifth year of the study) was performed in late spring and early summer of 2013.

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 9-1 for the location of Mass Emission stations.

The ME-VR2 station is located at the Ojai Valley Sanitary District's wastewater treatment plant (WWTP) near Cañada Larga Road and captures runoff from the city of Ojai, several unincorporated communities (e.g., Meiners Oaks, Casitas Springs), a very small portion of the City of Ventura, 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 Camarillo Street (formerly 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.

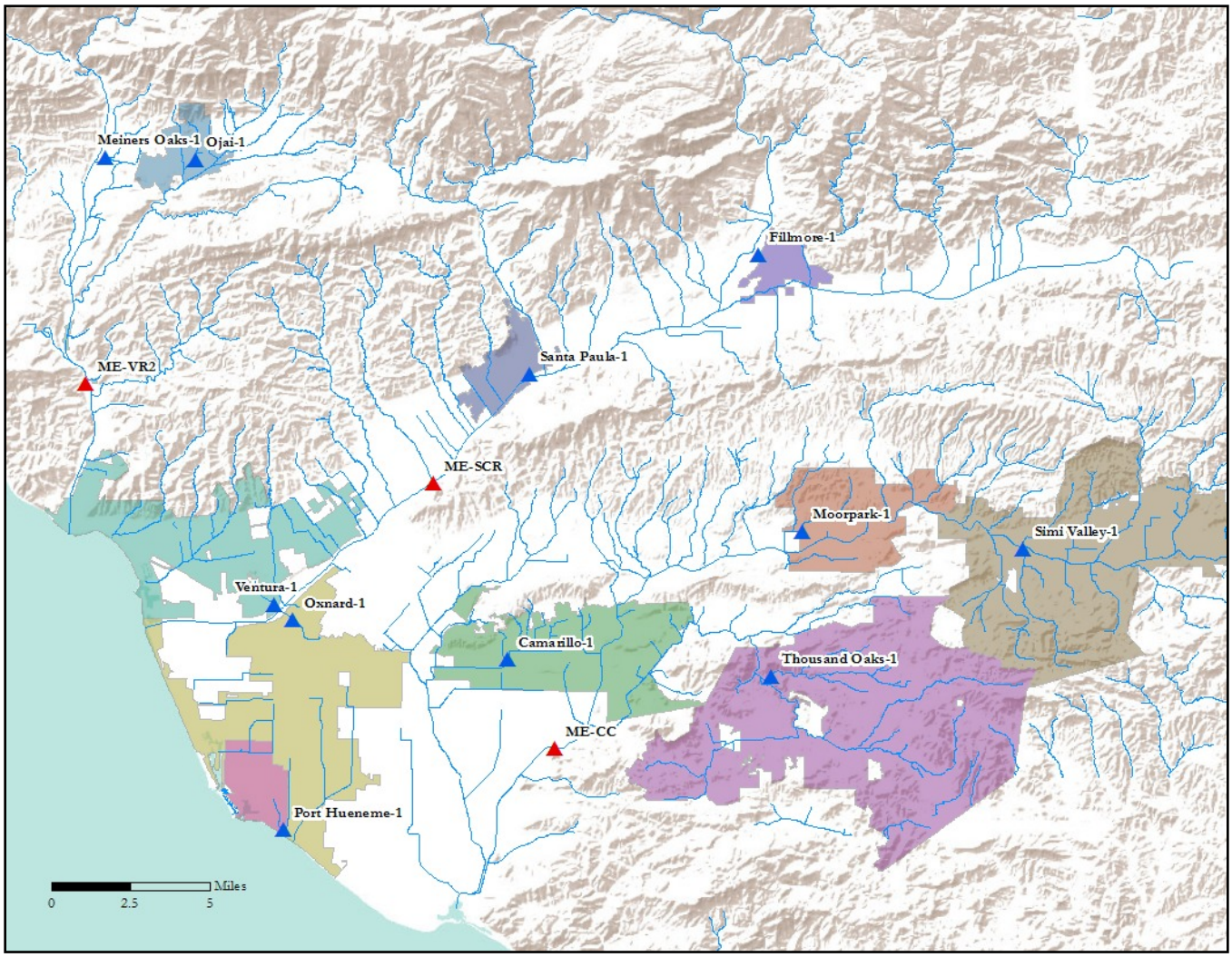
The ME-SCR station is located at the United Water Conservation District's (UWCD) Freeman Diversion Dam east of Saticoy and captures runoff from the cities of Santa Paula and Fillmore, communities upstream in Los Angeles County, agricultural fields, and a large amount of undeveloped landscape. Monitoring 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. Flood flows are monitored at the diversion dam by the Hydrology Section, but there is no flow meter installed at the river diversion gate due to complex hydraulics. A sonic water level sensor was installed this year over the pond behind the diversion so that a gate opening would be noticed. A text message is automatically sent to sampling team members when the gate is opened, which lets them know the intake strainer could lose contact with the river. A special swing arm intake strainer has been installed to alleviate this potential problem, but the installation is still being refined.

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. The four municipalities selected for inclusion in the 2009/10 Stormwater Monitoring Program were Camarillo (MO-CAM), Ojai (MO-OJA), unincorporated Meiners Oaks (MO-MEI) and Ventura (MO-VEN).[5] The stations in the seven remaining municipalities brought online for the 2010/11 monitoring year were 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 D.

Figure 9-1 Mass Emission and Major Outfall Sampling Locations



[5] 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.

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 Walnut[6] Canyon Drain (a tributary to Arroyo Las Posas) near the intersection of Los Angeles Avenue and Mira Sol Drive in Moorpark. 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 in Oxnard. 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 in Port Hueneme. 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 in Simi Valley. 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.

[6] Incorrectly referred to as Gabbert Canyon in reports and documents prior to the 2012/13 Annual Report.

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 estimated. 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.

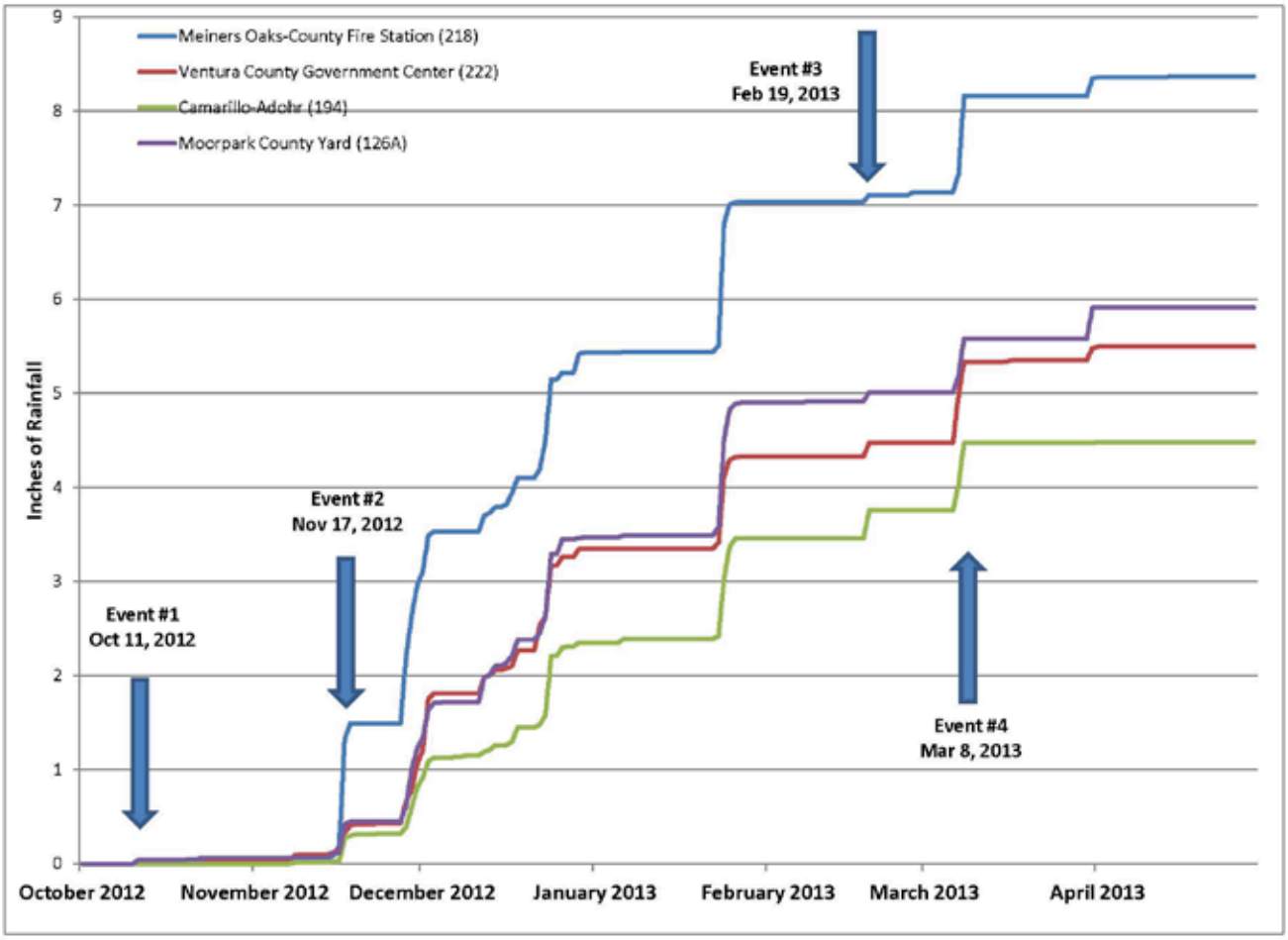
9.4.1 Precipitation

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 D.

Figure 9-2 Precipitation at Selected Sites

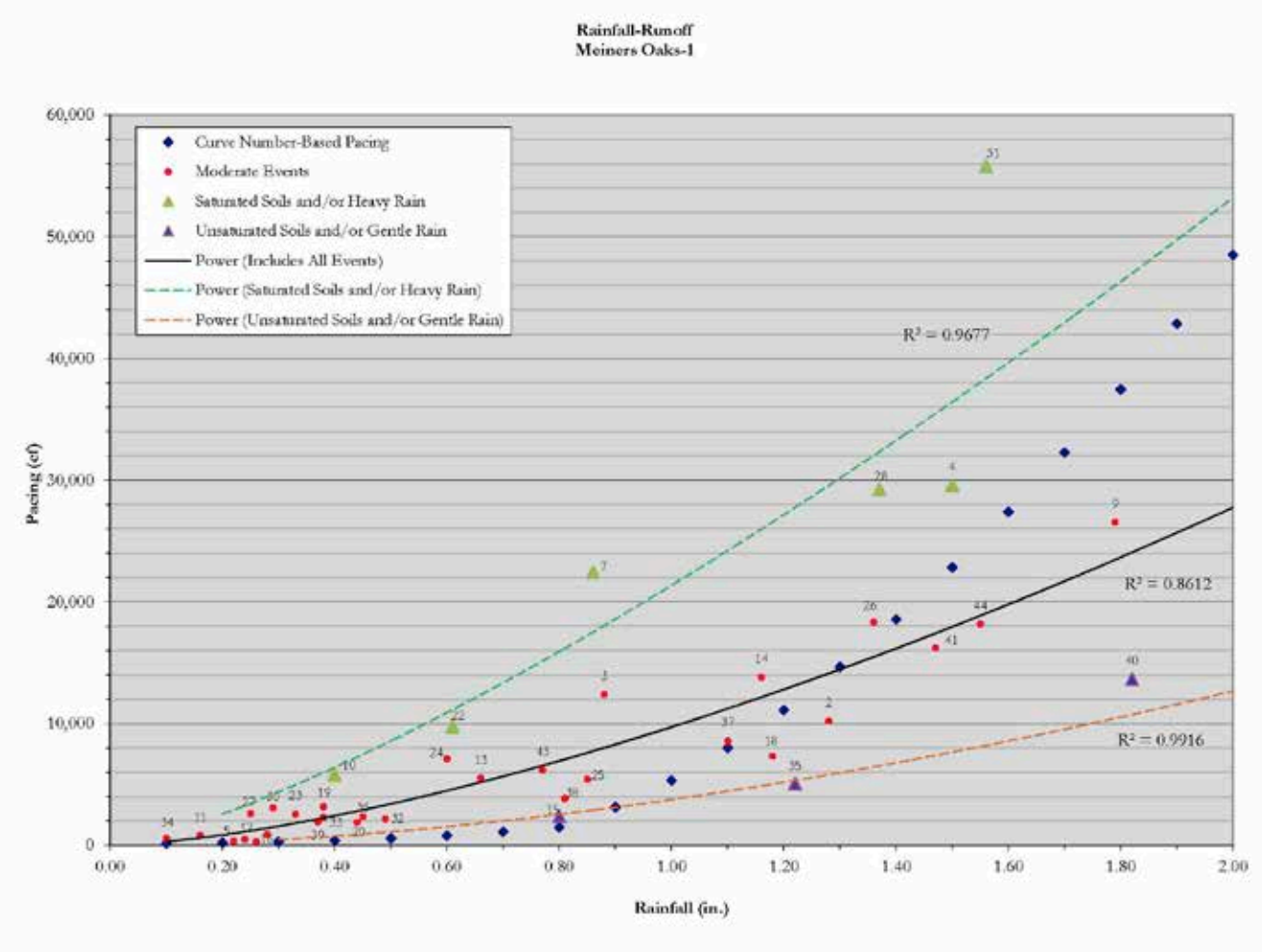


9.4.2 **Rainfall-to-Runoff Ratios**

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 D.

Over the course of the last four 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. The Program also tracks the antecedent soil moisture for each event, flagging it as "Dry", "Moderate", or "Wet". This allows the Stormwater Monitoring Program to more accurately pace automated samplers based on the predicted size of each storm. Figure 9-3 shows an example of these 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. 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 0.6" rainfall event would generate about 0.25 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 7,000 cubic feet per aliquot (see data point #24). 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 telemetry capabilities of the Stormwater Monitoring Program. Prior to the 2009/10 monitoring season, 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 allows remote changes to sampler pacing, enabling conditions and alarms. 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

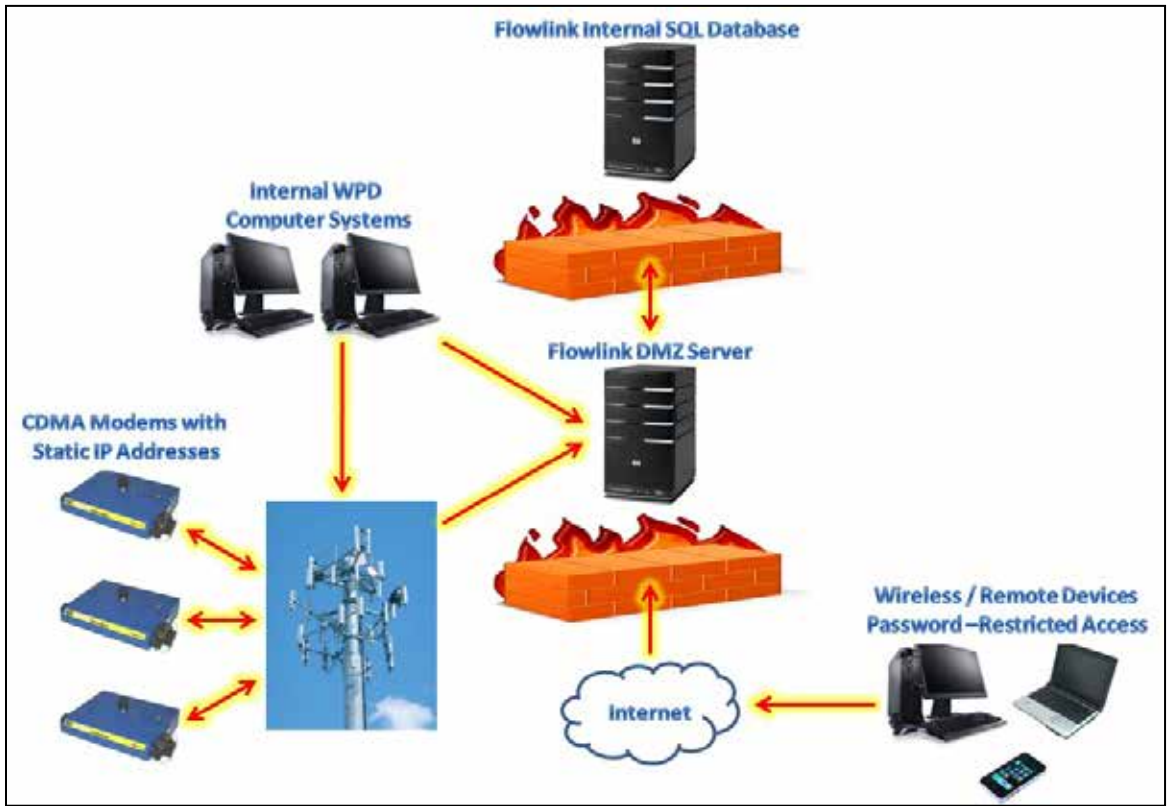


Figure 9-5. Real-Time Data Available in Storm Control Center

9.4.4 **Sample Collection**

As detailed in the NPDES Permit, the Stormwater Monitoring Program is to sample one dry-weather and three wet-weather events at the mass emission and major outfall stations during each Permit year. Wet-weather events are described as "discharge resulting from a storm event that is 0.25 inches or greater" preceded by at least 7 days of dry weather (<0.10" each day). Mass Emission Station wet-weather events have the additional criteria of a greater than 20% increase in base flow. The Permit emphasizes 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.

Due to the unusually dry winter, the Stormwater Monitoring Program encountered difficulties in sampling the necessary quantity and type of events dictated by the NPDES Permit. The lack of qualifying storms (>0.25" rain forecast after seven days of dry weather) combined with the overall low precipitation resulted in less runoff at the sites in both wet and dry weather. The required number of wet events were successfully sampled for four sites: ME-CC, MO-THO, MO-OJA, and MO-HUE. Six stations were sampled during three rain events (ME-SCR, MO-CAM, MO-FIL, MO-SPA, MO-OXN, MO-SIM, and MO-VEN); however Event 3 did not meet the precipitation threshold of 0.15" at these sites, as required by the Permit for sample analysis, which resulted in only two successful wet events for these sites. Three sites were only sampled during two wet events, ME-VR2, MO-MEI, and MO-MPK. Eleven sites were successfully sampled in dry weather. Three sites (MO-MPK, MO-MEI, and MO-SPA) did not have sufficient runoff available for sample collection, so were not sampled during the dry event. This should not be interpreted as a missed sample, rather as zero discharge of pollutants since removing dry weather flows is a goal of the Program. See Table 9-1 for site flow and event durations. In Table 9-1

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 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 D and is described further in the event descriptions, below.

The sampling methods and sample handling procedures used during the 2012/13 monitoring year are described in *Ventura Countywide Stormwater Monitoring Program: Water Quality Monitoring Standard Operating Procedures, 2009-2014.*

[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 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."

Table 9-1: Site Flow Data, Precipitation Data, and Event Durations

Site ID	Event No.	Event Date[a]	Average Flow (CFS)	Rainfall (in)	Sampler Start Date, Time[b]	Sampler End Date, Time[b]	Event Duration	Days Since Previous ≥0.1" Rain	Rainfall at Previous Storm (in)
ME-CC	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	69.37	0.24	11/17/2012 11:31	11/18/2012 7:32	20:01	206	0.12
	3	2/19/2013	61.49	0.24	2/19/2013 20:43	2/20/2013 8:21	11:38	25	0.24
	4	3/8/2013	183.12	0.75	3/8/2013 0:06	3/8/2013 15:14	13:15	17	0.24
	5	5/23/2013	5.54	N/A	5/22/2013 9:45	5/23/2013 9:02	23:17	75	0.75
ME-VR2	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	1.63	0.74	11/17/2012 9:47	11/18/2012 9:31	23:44	218	0.50
	3[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	3/8/2013	7.53	0.94	3/7/2013 23:34	3/8/2013 9:52	10:18	43	0.89
	5	4/30/2013	8.51	N/A	4/29/2013 8:01	4/30/2013 7:14	23:13	52	0.94
ME-SCR	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	[c]	0.28	11/17/2012 6:38	11/18/2012 0:11	17:33	218	0.53
	3[f]	2/19/2013	[c]	0.08	2/19/2013 20:07	2/20/2013 6:58	10:51	25	0.39
	4	3/8/2013	[c]	0.80	3/7/2013 21:15	3/8/2013 10:40	13:25	41	0.39
	5	4/23/2013	[c]	N/A	4/22/2013 9:41	4/23/2013 8:55	23:14	45	0.80
MO-CAM	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	18.63	0.32	11/17/2012 6:35	11/17/2012 12:45	6:10	205	0.19
	3[f]	2/19/2013	19.42	0.06	2/19/2013 19:57	2/19/2013 20:34	0:37	24	0.41
	4	3/7/2013	0.10	0.72	3/7/2013 22:03	3/7/2013 23:40	1:37	41	0.41
	5	5/23/2013	0.00[d]	N/A	5/22/2013 10:13	5/23/2013 9:27	23:14	76	0.72
MO-MEI	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	4.40	1.13	11/17/2012 2:37	11/17/2012 7:18	4:41	205	1.55
	3[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	3/8/2013	0.05	0.89	3/7/2013 23:56	3/8/2013 0:26	0:30	41	0.18
	5	4/30/2013	DRY[e]	Dry	DRY[e]	DRY[e]	DRY[e]	Dry	Dry

Site ID	Event No.	Event Date[a]	Average Flow (CFS)	Rainfall (in)	Sampler Start Date, Time[b]	Sampler End Date, Time[b]	Event Duration	Days Since Previous ≥0.1" Rain	Rainfall at Previous Storm (in)
MO-OJA	1	10/12/2012	14.35	0.43	10/11/2012 12:55	10/11/2012 13:35	0:40	182	1.86
	2	11/17/2012	0.33	1.08	11/17/2012 1:47	11/17/2012 23:02	21:15	27	0.14
	3[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	3/8/2013	0.50	1.07	3/7/2013 23:28	3/8/2013 0:17	0:49	17	0.10
	5	4/30/2013	0.00[d]	N/A	4/29/2013 7:15	4/30/2013 6:29	23:14	29	0.29
MO-VEN	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	3.43	0.25	11/17/2012 7:02	11/18/2012 1:47	18:45	205	0.14
	3[f]	2/19/2013	15.25	0.07	2/19/2013 19:34	2/19/2013 20:33	0:59	25	0.19
	4	3/7/2013	9.27	0.82	3/7/2013 19:42	3/7/2013 21:30	1:48	41	0.19
	5	4/23/2013	0.00[d]	N/A	4/22/2013 8:22	4/23/2013 7:58	23:36	46	0.82
MO-OXN	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	7.03	0.25	11/17/2012 6:50	11/17/2012 15:57	9:07	205	0.14
	3[f]	2/19/2013	7.52	0.07	2/19/2013 19:41	2/19/2013 22:09	2:28	25	0.19
	4	3/7/2013	0.10	0.82	3/7/2013 20:03	3/7/2013 22:52	2:49	41	0.19
	5	4/23/2013	0.00[d]	N/A	4/22/2013 15:07	4/23/2013 8:06	16:59	47	0.82
MO-HUE	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	[c]	0.50	11/17/2012 0:05	11/17/2012 22:56	22:51	205	0.20
	3	2/19/2013	[c]	0.18	2/19/2013 6:25	2/20/2013 3:16	20:51	24	0.24
	4	3/8/2013	[c]	0.88	3/7/2013 19:55	3/8/2013 7:49	11:54	17	0.18
	5	4/30/2013	[c]	N/A	4/29/2013 8:43	4/30/2013 7:57	23:14	29	0.13
MO-SPA	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	1.79	0.35	11/17/2012 1:14	11/17/2012 11:19	10:05	218	1.2
	3[f]	2/19/2013	1.38	0.09	2/19/2013 19:46	2/19/2013 21:23	1:37	25	0.24
	4	3/8/2013	4.01	0.85	3/7/2013 20:51	3/7/2013 23:14	2:23	41	0.24
	5	4/23/2013	DRY[e]	Dry	DRY[e]	DRY[e]	DRY[e]	Dry	Dry

Site ID	Event No.	Event Date[a]	Average Flow (CFS)	Rainfall (in)	Sampler Start Date, Time[b]	Sampler End Date, Time[b]	Event Duration	Days Since Previous ≥0.1" Rain	Rainfall at Previous Storm (in)
MO-FIL	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	[c]	0.42	11/17/2012 7:39	11/18/2012 1:13	17:34	218	1.22
	3[f]	2/19/2013	[c]	0.10	2/19/2013 20:32	2/20/2013 7:32	11:00	25	0.33
	4	3/8/2013	[c]	0.63	3/7/2013 23:57	3/8/2013 9:27	9:30	17	0.10
	5	4/23/2013	[c]	N/A	4/22/2013 7:03	4/23/2013 6:17	23:14	45	0.63
MO-SIM	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	10.12	0.26	11/17/2012 7:17	11/17/2012 12:00	4:43	205	0.31
	3[f]	2/19/2013	23.92	0.14	2/19/2013 20:11	2/19/2013 20:57	0:46	25	0.33
	4	3/8/2013	2.00	0.62	3/7/2013 23:02	3/8/2013 1:30	2:28	17	0.14
	5	5/23/2013	1.79	N/A	5/22/2013 8:19	5/23/2013 7:33	23:14	16	0.31
MO-MPK	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	1.27	0.26	11/17/2012 7:46	11/17/2012 14:39	6:53	218	0.63
	3[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	3/8/2013	5.29	0.56	3/8/2013 1:15	3/8/2013 3:00	1:45	41	0.34
	5	5/23/2013	DRY[e]	Dry	DRY[e]	DRY[e]	DRY[e]	Dry	Dry
MO-THO	1[f]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	11/17/2012	12.30	0.24	11/17/2012 9:22	11/17/2012 15:28	6:06	218	0.70
	3	2/19/2013	39.52	0.21	2/19/2013 21:05	2/19/2013 22:51	1:46	25	0.52
	4	3/8/2013	48.99	0.54	3/7/2013 23:51	3/8/2013 3:37	3:46	17	0.21
	5	5/23/2013	0.63	N/A	5/22/2013 8:55	5/23/2013 8:09	23:14	16	0.30

* 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.

[f] Non-qualifying event, < 0.15" rainfall.

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 9-9-6). 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, with the help of a long, extended swing sampler (see Figure 9-7) when necessary. This technique was also employed at some of the Major Outfall stations where getting into the channel would have compromised personnel safety.

Figure 9-9-6. 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 2012/13 monitoring season are considered best available estimates of storm EMCs.

The chemical analysis of some constituents is not possible to be accurately performed on samples transported to 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 2012/13 monitoring season are presented in Appendix D in Attachment D.

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 2012/13 monitoring season are presented in Appendix E in Attachment D.

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 contact with the water, thereby causing insufficient sample volume as the sampler pulls air instead of river water. The Stormwater Monitoring Program has attempted to deal with the situation at this site by installing a swing arm intake line, which is designed to stay submerged at changing water levels. 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 sample volume.

Event 1 (Wet)

The first rainfall event of the year was a cutoff low and so difficult to forecast. The 24 hour forecast preceding the event predicted sufficient rain in the Ojai Valley to sample, so MO-OJA, MO-MEI, and ME-VR2 stations were set up. The rain began on October 11, 2012 but was very patchy, with MO-OJA receiving 0.12" (Stewart Canyon Gage) to 0.74 (Ojai Fire Station Gage) and no rain falling in Meiners Oaks.

Event 2 (Wet)

The second monitoring event of the season was the first flush event for all sites except MO-OJA. Rain began on the morning of November 17, 2012. Rainfall estimates of 0.25" were forecast for Ventura County and observed amounts were between 0.25 – 1.25".

Event 3 (Wet)

Event 3 occurred on February 19-20, 2013. The forecast for this storm differed depending on forecaster with the national weather service (NWS) predicting 0.33 – 0.66" and Alan Fox predicting 0.10 – 0.20", with possibly 0.30" for south county. Since the end of the wet season was approaching and only one rain event had been sampled for most sites, this storm was sampled. Rainfall was below the required threshold for analysis (0.15") at several sites; however samples were analyzed due to concerns that there would be insufficient qualifying rain events before April 15th.

Event 4 (Wet)

Event 4 occurred on March 7-8, 2013. Rainfall amounts of 0.10 – 0.75" were predicted across the county. Rainfall was higher than forecast. All sites were successfully sampled.

Event 5 (Dry)

The dry-weather sampling event was conducted in three parts, April 22-23, April 29-30, and May 22-23, 2013. Sampling was organized and conducted by major watershed. The Santa Clara River Watershed sites (ME-SCR, MO-FIL, MO-SPA, MO-OXN, and MO-VEN) were sampled on April 22-23, approximately a month and a half after the last rainfall. MO-SPA had been dry for most of the month prior to the sampling event, including the preceding five days and stayed dry during the sampling event so samples could not be collected. The Ventura River Watershed sites (ME-VR2, MO-OJA, and MO-MEI) and Coastal Watershed (MO-HUE) were sampled on April 29-30, approximately one month after the last rainfall. However, MO-MEI had been dry during most of the rain season due to the lack of rainfall, and remained dry during the sampling event so samples could not be collected. The Calleguas Creek Watershed (ME-CC, MO-CAM, MO-SIM, MO-MPK, and MO-THO) were sampled a month later on May 22-23, 2013. There was no flow at MO-MPK so samples could not be taken. Sampling duration at all sites was about 23 hours.

2013-DRY

The dry-season, dry-weather grab samples were collected from representative MS4 outfalls on two days, August 12 and 13, 2013. Fillmore-1 (MO-FIL), Oxnard-1 (MO-OXN), Port Hueneme-3 (Bubbling Springs Park), and Ventura-1 (MO-VEN) were sampled on August 12, 2013. Ojai-1 (MO-OJA), Santa Paula-1 (MO-SPA), Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Simi Valley-1 (MO-SIM), and Thousand Oaks-1 (MO-THO), and Unincorporated-4 (Arroyo Santa Rosa above Box Canyon) were sampled on August 13, 2013. 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 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.

[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 9.9 of this report.

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
	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

Classification	Constituent	Method
	Iron (Dissolved)	EPA 200.7 or 200.8
	Iron (Total)	EPA 200.7 or 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
	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]

[9] In cases of limited sample, other methods may be used.

Classification	Constituent	Method
	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]
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

Classification	Constituent	Method
	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
	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

Classification	Constituent	Method
	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

9.5 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 2012/13 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 2012/13 monitoring season are presented in Appendix F in Attachment D.

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 2012/13 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 2012/13 monitoring season are presented in Appendix G in Attachment .

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 Laboratories. Intake lines for the automated samplers were flushed with 1% nitric acid and distilled water prior to the first event of the season, with the exception of MO-HUE, which was flushed with distilled water only as the sample intake is inaccessible preventing nitric acid recovery. Intake lines were flushed with distilled water before and after each successive event for the remainder of the season. 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 2012/13 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 at the laboratory into brand new sample bottles for

analysis. Equipment blanks were submitted to the analytical laboratory and analyzed using the same methods as those employed for routine environmental sample analysis.

9.5.1 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 (HNO3,methanol)" (composite bottle) and "Tubing Blank (distilled)" (intake line cleaned with distilled water only) samples were collected for the 2012/13 monitoring year on August 2, 2012. The "Tubing Blank (distilled)" sample was collected through the intake line at MO-VEN after flushing the line with two liters of 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 in either of the Preseason 1 equipment blanks and therefore do not require additional evaluation include: antimony, arsenic, beryllium, cadmium, chromium, nickel, selenium, silver, zinc, nitrate+nitrite as nitrogen, and all EPA 625 organics except for bis(2-ethylhexyl) phthalate. Constituents that were detected below the reporting limit in one or both equipment blanks and/or are below the levels typically found in stormwater and therefore do not require additional evaluation include: aluminum, iron, lead, and thallium. Three constituents that were detected at levels found in stormwater samples are bis(2-ethylhexyl)phthalate, mercury, and copper. The amount of mercury detected in each of the equipment blanks (0.041 and 0.036 ug/L) was below the reporting limit (0.050 ug/L) and similar to the amount frequently seen in the laboratory's method blanks, including the method blank for this batch (0.039 ug/L), so the detection is most likely due to laboratory contamination. Similarly, the presence of bis(2-ethylhexyl)phthalate in the tubing blank (4.2 ug/L) was below the 5ug/L reporting limit and was also seen in the method blank (2.88 ug/L). Copper was detected in the tubing blank but not the carboy, so additional tests were conducted (Preseason 2) to identify the source.

Preseason 2 investigated whether flushing the lines with 1% nitric acid would be sufficient to eliminate the copper contamination. Two sites, MO-VEN (the site of the original Preseason 1 sample) and MO-MEI were selected for further sampling. Each site was flushed with 2 liters of distilled water and then a tubing blank sample was collected using ultrapure water. The sites were then flushed with 1 L of 1% nitric acid followed by an additional 2 L of distilled water and re-sampled using ultrapure water. The four samples were then sent to the laboratory for copper analysis by EPA 200.8. Low levels of copper were detected above the reporting limit for both of the distilled water only tubing blanks. Copper was not detected in either of the 1% nitric acid rinsed tubing blank samples.

Based on these results, the Stormwater Monitoring Program determined that cleaning procedures were adequate but that flushing the lines with nitric acid at the beginning of the season may help avoid possible copper contamination issues. 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 2013/14 monitoring season.

Table 9-4. Constituents Detected in Equipment Blanks Preseason 1 and 2

		Preseason 1	**Preseason 1**	**2012/13**	**Evaluation**
Constituent	Reporting Limit (mg/L)	Carboy Blank (HNO3,Methanol) Concentration (mg/L)	Tubing Blank (distilled) Concentration (mg/L)	Environmental Sample Range (when detected) Concentration (mg/L)	Additional Evaluation Needed?
Preseason 1		Carboy	MO-VEN	All Sites	
Aluminum	5	3.1[1]	10	5.1 – 79,000	No
Copper	0.5	-	0.53[2]	0.43[1] - 280	Yes – see below
Iron	10	-	1.7[1]	6.5[1] – 170,000	No
Lead	0.5	-	0.02[1]	<0.024 - 59	No
Mercury	0.050	0.041[1]	0.036[1]	<0.039 – 0.240	No
Thallium	0.2	0.02[1]	0.04[1]	<0.009 – 2.3	No
Bis(2-ethylhexyl) phthalate	5	-	4.2[1]	<1.1 – 5.8	No

		Preseason 2	**Preseason 2**	**Preseason 2**	**Preseason 2**
Constituent	Reporting Limit (mg/L)	Tubing Blank (distilled) Concentration (mg/L)	Tubing Blank (HNO3,distilled) Concentration (mg/L)	Tubing Blank (distilled) Concentration (mg/L)	Tubing Blank (HNO3,distilled) Concentration (mg/L)
Preseason 2		MO-VEN	MO-VEN	MO-MEI	MO-MEI
Copper	0.5	0.6*	< 0.5	0.64	< 0.5

[1] DNQ

[2] Follow up samples collected during Preseason 2.

9.5.2 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 2 (MO-CAM first flush) and achieved a 100% success rate for the 16 samples. Laboratory-initiated laboratory duplicate samples were analyzed on non-project samples for Events 1 – 5, Laboratory duplicate samples were also analyzed for ME-CC (Events 2, 3, and 5), ME-SCR (Events 2, 3, and 5), MO-FIL (Event 5), MO-HUE (Event 2 and 3), MO-OJA (Event 5), and MO-OXN (Events 4 and 5). Results are shown in Table 9-5 and Table 9-6. Of the 76 laboratory duplicates, all were within the DQO for relative percent difference; however one was analyzed outside of the holding time so the overall success rate was 98.7%.

Table 9-5. Field Duplicate Success Rates

Classification	Constituent	Method	Total Samples	Samples Outside DQO	Success Rate
Bacteriological	Total coliform / *E. coli*	MMO-MUG	2	0	100
Bacteriological	Fecal coliform	SM 9221 E	1	0	100
Conventional	Cyanide	EPA 335.4 or ASTM D7511	1	0	100
Hydrocarbon	Oil and grease/TPH	EPA 1664A	2	0	100
Organic	Various	EPA 524.2	2	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	10	0	100
Conventional	Alkalinity as CaCO3	SM 2320 B	7	0	100
Conventional	Chemical Oxygen Demand	EPA 410.4	8	0	100
Conventional	Specific Conductance	SM 2510 B	9	0	100
Conventional	Total Dissolved Solids	SM 2540 C	16	0	100
Conventional	Total Suspended Solids	SM 2540 D	12	0	100
Conventional	Biochemical Oxygen Demand	SM 5210 B	4	0	100
Conventional	MBAS	SM 5540 C	1	0	100

9.5.3 **Holding Time Exceedances**

Most 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

[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.

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 2012/13 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	147	0	100
Bacteriological		0	100
Cation	120	0	100
Conventional	707	4[a]	99.4
Hydrocarbon	104	0	100
Metal	1563	0	100
Nutrient	396	0	100
Organic	4461	0	100
PCB	343	0	100
Pesticide	4876	0	100

[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 results 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.

9.5.4 Dilutions

Due to the nature of stormwater matrices, some samples required dilutions prior to analysis. Of the 1,226 samples that were only qualified due to a dilution, 386 were at or above the reporting level and 813 were ND or DNQ with MDLs below the relevant WQO 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. 27 samples were ND with MDLs above the relevant WQO.

9.5.5 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 9.5. Results of QA/QC analyses performed on individual samples can be found in Appendix F and Appendix G in Attachment D.

9.5.6 QA/QC Summary

In summary, a total of 10,951 environmental samples were analyzed during the 2012/13 monitoring season. Of these, 10,630 met all DQOs for that particular sample. The Stormwater Monitoring Program's QA/QC evaluation process identified 321 environmental samples in need of qualification, which translates into the Stormwater

Monitoring Program achieving a 97.1% success rate in meeting program data quality objectives. No samples were rejected from the dataset.

Overall, the wet-weather and dry-weather events monitored during the 2012/13 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.

9.6 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 2012/13 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 1-4), 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. Prior to the 2011/12 Annual Report, 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 infrequent and 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 5 and 2013-DRY), 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, therefore CTR Human Health (Water & Organisms) is now being considered as well.

The rationale and consequences of the changes related to the application of CTR numerical objectives to wet- and dry-weather data are discussed in Section 9.6.1. Additional updates to the Basin Plan and CTR for the 2012/13 monitoring year are discussed in Section 9.6.3.

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.

9.6.1 Re-evaluation of application of CTR numeric criteria to receiving waters

Prior to the 2011/12 Annual Report, the CTR Numeric Criteria were applied as described on page 30 of the 2010/11 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 the 2011/12 monitoring 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.

9.6.2 Corrections to BPO Objectives and Reporting of Exceedances

During the 2012/13 monitoring year, the Stormwater Monitoring Program determined that there were errors in how their water quality database was comparing sample results to water quality objectives (WQO) for some constituents. While all data were reported accurately, these errors led to some results not being identified as above Basin Plan Objectives. The new information on constituents above WQOs did not identify any additional "cause or contribute" relationships between monitored outfalls and exeedances of WQOs in receiving waters. The Regional Board was notified of the issue and corrective actions that were taken in a letter dated January 25, 2013.

The Program uses its water quality database to identify water quality monitoring results that are above California Toxics Rule (CTR) and Basin Plan (BP) objectives. The database performs these calculations using a pre-programmed set of reference values for the CTR and Basin Plan, including site specific objectives. The reference values are stored in the CTR water quality objectives and Basin Plan water quality objectives (BPO) reference tables, and are used for these calculations to reduce the likelihood of human error.

The BPO reference table was programmed using the WQO listed in the June 13, 1994, Basin Plan. The Basin Plan incorporates by reference the maximum contaminant levels (MCLs) listed in Section 64431 and 64444 of Title 22 of the California Code of Regulations. These sections address water quality for public drinking water systems, and are applied to receiving waters with a potential Municipal Water Supply (MUN) designation. The Title 22 MCLs are periodically reviewed and updated by the California Department of Public Health; however, updates made after 2004 were not made to the BPO reference table in the database.

The Program also determined that due to a programming error some results were not being flagged due to a discrepancy between the units used to store the sample results and the units used in the reference tables. While the BPO in the reference table was the equivalent of the objective in the Basin Plan, a mismatch in units between the BPO in the reference table (stored in µg/L) and the Program's monitoring result (stored in mg/L) resulted in the database not correctly identifying Program monitoring results above the BPO.

Affected Program Data

The constituents affected by changes in BPO due to the updated Title 22 MCLs include 1,2,4-Trichlorobenzene, arsenic (total), and perchlorate. Two constituents were affected by the unit discrepancy, total chlorine residual, and methylene blue active substances (MBAS). Previously unreported samples with results above the BPOs are included in the tables below.

<u>1,2,4-**Trichlorobenzene**</u>

The BPO for 1,2,4-Trichlorobenzene decreased from 70 µg/L to 5 µg/L on June 12, 2003. The Program's monitoring never detected 1,2,4-Trichlorobenzene above the BPO. However meeting the 2010 Permit's Minimum Reporting Level was not possible on three occasions due to dilutions necessary to remove matrix interference. Although nothing was detected, the subsequent MDLs of 5.5 µg/L were above the BPO of 5 µg/L.

<u>Arsenic</u>

The BPO for arsenic decreased from 50 µg/L to 10 µg/L on November 28, 2008. Any results above the previous BPO of 50 µg/L have already been reported. Two results were affected by the change and are shown in the table below.

Table 9-8 Total Arsenic

Site ID	Event ID	Sample Date	Event Type	Sign	Result	Units	BPO
A-1	2008/09-1	11/26/2008	Wet	=	11.6	µg/L	10
ME-SCR	2011/12-3	3/18/2012	Wet	=	20	µg/L	10

BPO in effect 11/28/2008

Perchlorate

The 6 µg/L BPO for perchlorate was added October 18, 2007. The Program began sampling for perchlorate in October 2009 in compliance with the current 2010 Permit. Three samples were detected at levels above the BPO.

Table 9-9 Perchlorate

Site ID	Event ID	Sample Date	Event Type	Sign	Result	Units	BPO
MO-FIL	2010/11-1	10/7/2010	Wet	=	12	µg/L	6
MO-SIM	2010/11-5	4/28/2011	Dry	DNQ	17*	µg/L	6
MO-FIL	2011/12-1	10/6/2011	Wet	=	8.6	µg/L	6

BPO in effect 10/18/2007

* Detected, Not Quantified. Analysis required dilution resulting in a raised MDL and RL

Methylene Blue Active Substances

The Program began monitoring for Methylene Blue Active Substances (MBAS) in October 2009 under the 2010 Permit. The units in the BPO reference table in the database were in µg/L; however, the Program's monitoring results were in mg/L. The results above the BPO are included in the table below.

Table 9-10 Methylene Blue Active Substances (MBAS)

Site ID	Event ID	Sample Date	Event Type	Sign	Result	Units	BPO
MO-VEN	2009/10-1	10/14/2009	Wet	=	0.59	mg/L	0.5
MO-MEI	2010/11-1	10/6/2010	Wet	=	0.52	mg/L	0.5
MO-OXN	2010/11-1	10/6/2010	Wet	=	0.51	mg/L	0.5
MO-SPA	2010/11-1	10/7/2010	Wet	=	0.9	mg/L	0.5
MO-THO	2010/11-1	10/7/2010	Wet	DNQ	0.51	mg/L	0.5
MO-SPA	2010/11-2	10/30/2010	Wet	=	0.84	mg/L	0.5
MO-CAM	2010/11-2	10/30/2010	Wet	=	0.54	mg/L	0.5
MO-OXN	2010/11-2	10/30/2010	Wet	=	0.7	mg/L	0.5
MO-VEN	2010/11-2	10/30/2010	Wet	=	0.53	mg/L	0.5
MO-MPK	2010/11-5	4/29/2011	Dry	=	2.4	mg/L	0.5
MO-SPA	2011/12-1	10/5/2011	Wet	=	0.53	mg/L	0.5

BPO in effect 6/13/1994

Total Chlorine Residual

The Basin Plan has included a WQO for total chlorine residual since June 13, 1994. The Program has monitored the sites prescribed in the Permit since 2001. The units in the BPO reference table in the database were in µg/L;

however, the Program's monitoring results were in mg/L. The results above the BPO are included in the table below.

Table 4. Total Chlorine Residual

Site ID	Event ID	Sample Date	Event Type	Sign	Result	Units	BPO
MO-CAM	2009/10-1	10/14/2009	Wet	=	1.6	mg/L	0.1
ME-SCR	2009/10-1	10/14/2009	Wet	=	1.5	mg/L	0.1
ME-CC	2011/12-2	1/21/2012	Wet	DNQ	0.15	mg/L	0.1
W-4	2003/04-1	2/3/2004	Wet	=	0.13	mg/L	0.1
ME-CC	2010/11-1	10/7/2010	Wet	DNQ	0.13	mg/L	0.1
ME-CC	2010/11-2	10/31/2010	Wet	=	0.12	mg/L	0.1

BPO in effect 6/13/1994

Corrective Actions

The appropriate units and Title 22 objectives have been applied to the reference table and all identified discrepancies have been rectified and reported here. To prevent this issue from occurring in the future, the Program will continue to review our database for potential errors, and annually check for changes to the Basin Plan, including incorporations by reference, and will update the water quality objective reference tables as needed before reporting data in the Annual Report.

Even though no additional "cause or contribute" relationships between monitored outfalls and exeedances of WQOs in receiving waters were identified, the new information learned about these constituents will be considered by the Program when prioritizing our pollutants of concern and directing program activities accordingly.

9.6.3 Updated Application of Water Quality Objectives

During the 2012/13 monitoring year, the Program re-evaluated the way in which the Basin Plan water quality objectives (BPO) for ammonia and site specific water quality objectives (SSO) for total dissolved solids (TDS), chloride, and nitrogen; and California Toxics Rule water quality objectives (CTRO) for hardness-dependent metals, are calculated and compared to water quality results from Program monitoring stations. Although effluent limits do not apply to major outfalls, it is important to be able to determine whether the discharge from each outfall is causing or contributing to exceedances of water quality objectives (WQO) in the receiving water. Flowcharts and formulas are provided in Appendix K in Attachment D.

Ammonia

Ammonia BPO are determined for each site/sample based on salinity and pH, and in the case of dry weather and saltwater samples, temperature. Freshwater objectives are used for samples that are at or below 1 ppt salinity. Saltwater objectives (un-ionized ammonia objective converted to total NH3-N using the formula in Appendix K in Attachment D) are used for samples that are at or above 10 ppt. Samples that are between 1 ppt and 10 ppt use the more stringent of the freshwater or saltwater objectives. Program staff has reviewed the BP amendments and developed a flow chart to determine which ammonia BPO formulas should be used to calculate the appropriate objective for each site for both wet (acute objective) and dry (chronic objective) monitoring events. The flow charts are included in Appendix K in Attachment D.

There are two formulas for calculating freshwater dry weather (chronic) objectives and the selection of the appropriate formula depends on whether Early Life Stages (ELS) of fish are present or absent in the reach. ELS are presumptively present unless listed in the Basin Plan or a site-specific study is conducted. For the Ventura

County mass emission and major outfall stations, the sites that are designated COLD and/or MIGR are also designated "ELS Present", conversely, the sites that are not designated COLD/MIGR are designated "ELS Absent".

For Ventura County, waters within the Calleguas Creek Watershed, with the exception of Mugu Lagoon, the Estuary, and Reach 2 (Estuary to Portrero Rd), are not designated COLD/MIGR, therefore Program stations without a COLD/MIGR designation in this watershed include the mass emission station (ME-CC) and major outfall stations (MO-CAM, MO-MPK, MO-SIM, and MO-THO). Waters within Ventura County that are designated COLD and/or MIGR, include the reaches applicable to the remaining Program mass emission stations (ME-SCR and ME-VR2) and major outfall stations(MO-FIL, MO-SPA, MO-OXN, MO-VEN, MO-HUE, MO-OJA, and MO-MEI).

The correct calculation of ammonia BPO requires the collection of salinity, pH, and temperature data in addition to the total ammonia as nitrogen analysis. Salinity, pH, and temperature are measured in situ in the field using handheld meters at the time that event grab samples are collected, as the samples require immediate measurement in order to reflect the site conditions to which the organisms are exposed. Ammonia is collected as a composite sample and is analyzed at the laboratory within 28 days of sample collection (28-day holding time). Comparisons of the composite ammonia value to the grab BPO provide the best available assessment of compliance, given the restraints in collecting relevant sample data.

Ammonia Exceedance Updates

The Program uses their water quality database to identify results that are above water quality objectives (WQO) identified in the California Toxics Rule (CTR) and Basin Plan (BP). The database performs these calculations using a pre-programmed set of water quality objective reference values for the CTR and BP, including site specific objectives, and is used for these calculations to reduce the likelihood of human error.

The original 1994 BPO for ammonia has been amended 4 times (2002, 2004, 2005, and 2007) by the Los Angeles Regional Water Quality Control Board (RB); however these updates were not made to the Program's database tables. The 1994 BP contained tables for both one-hour average and four-day average ammonia BPO for waters designated as either WARM or COLD. The formulas behind the tables came from the United States Environmental Protection Agency's 1986 "Quality Criteria for Water" document and were pH-dependent.

The Database was originally programmed to compare both wet and dry event results for total ammonia as nitrogen (NH3-N) with the one-hour average (acute objective) concentration BPO formulas (separate formulas for WARM and COLD waters). In addition, the database was programmed to consider sites equal to "ME-VRx" as COLD and sites not equal to "ME-VRx" as WARM. This means that all dry event results were being incorrectly compared to acute rather than the lower chronic objectives, and multiple sites were being incorrectly designated as WARM and so were being compared to the WARM BPO instead of the COLD BPO.

The Database will be updated to accurately determine, calculate, and compare ammonia objectives with sample results. Until the update is complete, the objectives and comparisons will be made manually using the flow charts and formulas provided in the Appendix K in Attachment D.

The existing data collected under the current (R4-2010-0108) and previous (09-0057) orders were evaluated using the current objective and it was determined that there have been no ammonia exceedances at the mass emission stations. Elevated levels observed at the major outfalls during the same period are shown in Table 1 below. The table covers the period from October 1st, 2009 through June 30, 2013.

Table 9-11 Revised Ammonia Exceedances (Mass Emission Stations) and Elevated Levels (Major Outfalls) Report

EventType	SiteID	EventID	pH (pH Units)	Temp (°C)	Salinity (ppt)	Revised BPO NH3-N Freshwater (mg/L)	Revised BPO NH3-N Brackish Water (mg/L)	NH3-N Result (mg/L)	Above Revised BPO
Dry	MO-CAM	2009/10-4	9.91	28.4	1.2	0.084	**0.041**	0.19	Yes
Dry	MO-CAM	2011/12-4	9.85	29.1	1.2	0.083	**0.041**	0.26	Yes
Dry	MO-CAM	2012/13-5	9.64	27.6	0.8	**0.104**	NA	0.13	Yes
Dry	MO-VEN	2009/10-4	9.53	28	<0.1	**0.102**	NA	0.26	Yes
Dry	MO-VEN	2010/11-5	9.89	27.8	2.7	0.088	**0.042**	0.13	Yes
Dry	MO-VEN	2011/12-4	8.69	28.6	4.4	0.319	**0.133**	0.17	Yes
Wet	MO-OXN	2012/13-3	9.06	12.5	0.53	**0.807**	NA	1.4	Yes

NA: Not applicable
Applicable BPO

Waterbody (Site) Specific Objectives (SSO)

The BP lists the relevant SSOs for selected constituents by watershed and stream reach. SSOs apply to all waters tributary to the reaches listed. The Program has interpreted this to mean that the applicable SSOs for tributaries, and therefore major outfalls, are those assigned to the reach at the location at which the tributary or outfall joins the listed reach. Each listed watershed/stream reach is assigned either a numeric SSO or the narrative "no waterbody specific objectives". The constituents with SSOs that are relevant to the current Permit are TDS, chloride, and nitrogen (NO3-N+NO2-N).

The three Ventura County mass emission stations (ME-CC, ME-SCR, and ME-VR2) are located on reaches of main stems that have SSOs listed in the BP and so the applicable SSO to use for these sites is clear. Seven major outfall stations (MO-MEI, MO-OJA, MO-FIL, MO-SPA, MO-THO, MO-MPK, and MO-SIM) are located on outfalls or tributaries that discharge into main stem reaches that are listed with SSOs in the BP and so the applicable SSOs to use for these sites is also clear. The remaining four major outfall stations (MO-CAM[11], MO-OXN, MO-VEN, and MO-HUE[12]) discharge into reaches with "no waterbody specific objectives".

The footnote in the BP for "no waterbody specific objectives" includes a table that is described in the footnote as illustrating, "the mineral or nutrient quality necessary to protect different categories of beneficial uses [that] will be used as a guideline for establishing effluent limits in these cases. Protection of the most sensitive beneficial use(s) would be the determining criteria for the selection of effluent limits."

In previous years, the Program used the MUN limits from the footnote table as objectives for the sites without designated SSOs, however in retrospect, the application of the limits in the table to sites without an SSO was

[11]The Calleguas Creek Watershed is divided into two parts for SSO: above Portrero Road and below Portrero Road. If Portrero Road continued west in a straight line from its terminus, MO-CAM would be to the north, however the MO-CAM outfall discharges into Revolon Slough which discharges into Calleguas Creek at Mugu Lagoon, south of Portrero Road, therefore MO-CAM SSO are for below Portrero Road.

[12] Discharges into J Street Drain which discharges into the Pacific Ocean, therefore MO-HUE is assigned to the "Miscellaneous Ventura Coastal Streams" listing for SSO.

incorrect, as the footnote states that the limits "will be used as a guideline" when establishing effluent limits, and does not specify that they be used directly as SSOs. The current Permit does not have effluent limits applicable to outfalls and therefore the generation of effluent limits does not apply. SSOs that are developed for the receiving waters that do not currently have them would be applicable for comparison to discharges from related major outfalls to that receiving water.

Corrections to previously submitted "elevated levels" reports for the sites without an SSO are shown in Table 2. The table shows dry weather results only, as there were no wet weather results above the previously reported SSO (MUN guidelines) for these sites. The table covers the period from October 1st, 2009 through June 30, 2013.

Table 9-12 Revised SSO Elevated Levels Report for Sites without SSO – Dry Events

SiteID	EventID	Constituent	Sample Result (mg/L)	Previously Reported SSO (MUN Guidelines) (mg/L)	Revised SSO (mg/L)	Elevated Level
MO-CAM	2009/10-4	Chloride	340	250	None	No
MO-VEN	2009/10-4	Chloride	300	250	None	No
MO-VEN	2010/11-5	Chloride	270	250	None	No
MO-VEN	2011/12-4	Chloride	530	250	None	No
MO-VEN	2012/13-5	Chloride	680	250	None	No
MO-CAM	2009/10-4	Total Dissolved Solids	1500	500	None	No
MO-CAM	2010/11-5	Total Dissolved Solids	730	500	None	No
MO-CAM	2011/12-4	Total Dissolved Solids	660	500	None	No
MO-CAM	2012/13-5	Total Dissolved Solids	1200	500	None	No
MO-OXN	2010/11-5	Total Dissolved Solids	670	500	None	No
MO-OXN	2011/12-4	Total Dissolved Solids	690	500	None	No
MO-OXN	2012/13-5	Total Dissolved Solids	1400	500	None	No
MO-VEN	2009/10-4	Total Dissolved Solids	5200	500	None	No
MO-VEN	2010/11-5	Total Dissolved Solids	4800	500	None	No
MO-VEN	2011/12-4	Total Dissolved Solids	4600	500	None	No
MO-VEN	2012/13-5	Total Dissolved Solids	8400	500	None	No

Hardness-Dependent Metal Objectives

Freshwater aquatic life CTRO for the dissolved metals cadmium, copper, chromium (III), lead, nickel, silver, and zinc are expressed as a function of both a water-effect ratio (WER) and total hardness (as calcium carbonate). A WER is a specific pollutant's acute or chronic toxicity value measured in water from the site covered by the standard, divided by the respective acute or chronic toxicity value in laboratory dilution water. The Program uses the default WER of 1 for all mass emission and major outfall stations in Ventura County. Ambient hardness as calcium carbonate concentrations are used in the calculation up to a cap of 400 mg/L, above which the default value of 400 mg/L is used.

In dry weather, outfalls generally have very low or no flow. During storms, the flow is composed almost entirely of rain water runoff, which has very low amounts of calcium carbonate and therefore very low hardness. The Program has been using the hardness measured at the major outfall stations to determine whether elevated levels of the metals exist that could cause or contribute to an exceedance of the CTRO in the receiving water. However, since aquatic life CTRO do not apply to major outfalls (which are not habitat with the exception of MO-THO,

described below), it is more relevant to use the hardness as measured at the nearest receiving water station when available [13], where aquatic life criteria do apply. Using the lower hardness value from the outfall is not relevant for downstream beneficial uses as it does not represent the water quality of the receiving water. The nearest receiving water station corresponds with the watershed's mass emission station for most major outfall stations, with the exception of MO-THO and MO-HUE. The MO-THO station functions as both an outfall and receiving water as it is a listed reach in Basin Plan but also functions as an outfall for the City of Thousand Oaks and so the hardness measured at the site will be used in the calculation. The MO-HUE station is in a very small Miscellaneous Coastal Watershed without a mass emission station and so the hardness measured at the site will be used for the calculation.

Previously submitted major outfall station results with "elevated levels" of hardness-dependent metals have been recalculated using the appropriate receiving water hardness and are shown in Tables 3-5 below. The tables cover the period from October 1st, 2009 through June 30, 2013.

Table 9-13 Revised Acute (Wet Weather) Elevated Levels Report - Zinc, dissolved

SiteID	EventID	Site Hardness (mg/L)	RW Hardness (mg/L)	Previous CTRO (Site Hardness) (µg/L)	Revised CTRO (RW Hardness) (µg/L)	Zinc, dissolved (µg/L)	Above Revised CTRO
MO-CAM	2012/13-3	104	334	121.12	282.05	130	No
MO-OXN	2010/11-1	58	600	73.83	328.61	76	No
MO-OXN	2010/11-4	22	590	32.48	328.61	39	No
MO-OXN	2012/13-3	97.7	702	114.87	328.61	140	No
MO-OXN	2012/13-4	113	1130	130.03	328.61	160	No
MO-SPA	2010/11-1	85	600	102.08	328.61	120	No
MO-SPA	2010/11-2	43	510	57.33	328.61	58	No
MO-SPA	2012/13-4	74.4	1130	91.17	328.61	93	No

Table 9-14 Revised Acute (Wet Weather) Elevated Levels Report - Copper, dissolved

SiteID	EventID	Site Hardness (mg/L)	RW Hardness (mg/L)	Previous CTRO (Site Hardness) (µg/L)	Revised CTRO (RW Hardness) (µg/L)	Copper, dissolved (µg/L)	Above Revised CTRO
MO-CAM	2010/11-1	55	210	7.65	27.04	13	No
MO-CAM	2010/11-2	29	260	4.19	33.06	7.5	No
MO-CAM	2010/11-4	26	350	3.78	43.75	5.1	No
MO-CAM	2011/12-1	52	340	7.26	42.57	8.8	No
MO-CAM	2011/12-2	28	260	4.05	33.06	8.5	No
MO-CAM	2011/12-3	33	240	4.73	30.66	6.2	No
MO-CAM	2012/13-3	104	334	13.95	41.86	26	No

[13] If the receiving water hardness is unavailable for an event, then the CTRO will be calculated using the hardness measured at the site.

SiteID	EventID	Site Hardness (mg/L)	RW Hardness (mg/L)	Previous CTRO (Site Hardness) (µg/L)	Revised CTRO (RW Hardness) (µg/L)	Copper, dissolved (µg/L)	Above Revised CTRO
MO-CAM	2012/13-4	37.6	197	5.35	25.46	11	No
MO-MEI	2011/12-2	79	450	10.76	49.62	12	No
MO-MPK	2011/12-2	73	260	9.99	33.06	17	No
MO-OXN	2010/11-1	58	600	8.05	49.62	12	No
MO-OXN	2010/11-2	53	510	7.39	49.62	11	No
MO-OXN	2010/11-4	22	590	3.23	49.62	7.7	No
MO-OXN	2011/12-1	68	520	9.35	49.62	16	No
MO-OXN	2011/12-2	43	530	6.07	49.62	13	No
MO-OXN	2011/12-3	58	1400	8.05	49.62	13	No
MO-OXN	2012/13-3	97.7	702	13.15	49.62	21	No
MO-OXN	2012/13-4	113	1130	15.08	49.62	29	No
MO-SPA	2010/11-1	85	600	11.53	49.62	13	No
MO-SPA	2010/11-2	43	510	6.07	49.62	11	No
MO-SPA	2010/11-4	47	590	6.6	49.62	7.5	No
MO-SPA	2011/12-1	85	520	11.53	49.62	18	No
MO-SPA	2011/12-2	74	530	10.12	49.62	18	No
MO-SPA	2011/12-3	65	1400	8.95	49.62	13	No
MO-SPA	2012/13-3	107	702	14.33	49.62	25	No
MO-SPA	2012/13-4	74.4	1130	10.17	49.62	11	No
MO-VEN	2009/10-1	83	570	11.27	49.62	14	No
MO-VEN	2009/10-2	58	570	8.05	49.62	11	No
MO-VEN	2009/10-3	56	460*	7.78	49.62	8.2	No
MO-VEN	2011/12-2	52	530	7.26	49.62	11	No
MO-VEN	2012/13-4	171	1130	22.27	49.62	25	No

* Event 2009/10-3A

Table 9-15 Revised Chronic (Dry Weather) Elevated Levels Report - Copper, dissolved

SiteID	EventID	Site Hardness (mg/L)	RW Hardness (mg/L)	Previous CTRO (Site Hardness) (µg/L)	Revised CTRO (RW Hardness) (µg/L)	Copper, dissolved (µg/L)	Above Revised CTRO
MO-OXN	2010/11-5	230	≥400	18.25	29.28	33	Yes
MO-VEN	2009/10-4	≥400	≥400	29.29	29.28	45	Yes
MO-VEN	2010/11-5	≥400	≥400	29.29	29.28	41	Yes
MO-VEN	2011/12-4	≥400	≥400	29.29	29.28	79	Yes
MO-VEN	2012/13-5	≥400	≥400	29.29	29.28	56	Yes

9.7 2012/13 WATER QUALITY OBJECTIVE EXCEEDANCES AND ELEVATED LEVELS

Table 9-16 presents water quality objective exceedances at Mass Emission stations based on an analysis of the 2012/13 wet-season stormwater monitoring data. Constituents that were found at elevated levels[14] at sites upstream (i.e., related Major Outfall stations) are shown in bold and highlighted (see Section 9.7.3 through Section 9.7.6 for a discussion of the relationship between the Mass Emission and Major Outfall stations). Table 9-17 presents the elevated levels of constituents at Major Outfall stations based on an analysis of the 2012/13 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 9.7.3 through Section 9.7.6 for a discussion of the relationship between the Mass Emission and Major Outfall stations).

9.7.1 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-stormwater from causing or contributing to a condition of nuisance. Specifically, the Order contains the 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 wet-weather and dry-weather monitoring events during the 2012/13 monitoring year.

9.7.2 "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 9.6.1 and 9.6.3).

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.

[14] "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.

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 9-16. Water Quality Objective Exceedances at Mass Emission Stations

Site		2012/13-1 (Wet)	2012/13-2 (Wet)	2012/13-3 (Wet)	2012/13-4 (Wet)	2012/13-5 (Dry)	2013-DRY	Applicable Standard
	Constituent	**Value**	**Value**	**Value**	**Value**	**Value**	**Value**	
ME-CC	Chloride ^	NQE		**160**		**250**	NR	SSO: 150 mg/L (Basin Plan)
	Total Dissolved Solids ^	NQE				**1,100**	NR	SSO: 850 mg/L (Basin Plan)
	E. Coli	NQE	**11,199**	**373**	**341**		NR	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**16,000**	**2,400**			NR	400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	**2,200**	**1,100**	**2,400**		NR	1,000 µg/L (Basin Plan)
ME-SCR	Chloride ^	NQE		(NQE)		86	NR	SSO: 80 mg/L (Basin Plan)
	E. Coli	NQE	**472**	(NQE)			NR	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**700**	(NQE)			NR	400 MPN/100 mL (Basin Plan)
	Aluminum	NQE		(NQE)	**79,000**		NR	1,000 µg/L (Basin Plan)
	Arsenic	NQE		(NQE)	34		NR	10 µg/L (Basin Plan)
	Beryllium	NQE		(NQE)	4.8		NR	4 µg/L (Basin Plan)
	Cadmium	NQE		(NQE)	5.8		NR	5 µg/L (Basin Plan)
	Chromium	NQE		(NQE)	150		NR	50 µg/L (Basin Plan)
	Nickel	NQE		(NQE)	230		NR	100 µg/L (Basin Plan)
	Selenium	NQE		(NQE)		**5.2**	NR	5 µg/L (CTR)
	Thallium	NQE		(NQE)	2.3		NR	2 µg/L (Basin Plan)
ME-VR2	*E. Coli*	NQE	**1,178**	NQE	**987**		NR	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**1,600**	NQE	**900**		NR	400 MPN/100 mL (Basin Plan)
	2,4-Dinitrotoluene	NQE		NQE		0.45*	NR	0.11 µg/L (CTR)

Note: All metals are total unless otherwise stated * DNQ (NQE) Sampled, <0.15" Rain

NR: Not Required, Not Sampled ^ Site Specific Objectives

NQE: Non Qualifying Event (insufficient rainfall). MO-OJA was the only site that received sampleable rainfall on October 11, 2012 (Event 2012/13-1). For this reason, there are no corresponding receiving water results for this storm, or results for other Program site. The 2012/13-2 event was forecast >0.25" rainfall, however actual rainfall was sparse and patchy, with only 5 of 14 sites receiving qualifying (≥0.15") rainfall. Six sites were sampled and analyzed but received less than 0.15" rainfall so are not qualifying samples, per the terms of the Permit.

Highlighted: Elevated level of same constituent in one or more related major outfalls

Table 9-17. Elevated Levels at Major Outfall Stations

Site		2012/13-1 (Wet)	2012/13-2 (Wet)	2012/13-3 (Wet)	2012/13-4 (Wet)	2012/13-5 (Dry)	2013-DRY	Applicable Standard
	Constituent	Value	Value	Value	Value	Value	Value	
MO-CAM	*E. Coli*	NQE	10,462	743 (NQE)	6,131	1,777		235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	17,000	700 (NQE)	9,000	1,100		400 MPN/100 mL (Basin Plan)
	pH	NQE				9.64	10.17	8.5 pH units (Basin Plan)
	Aluminum	NQE	6,600	4,800 (NQE)	1,500			1,000 µg/L (Basin Plan)
	Ammonia as N	NQE				130		pH 9.89, WQO 42 µg/L (Basin Plan)
	Benzo(a)pyrene	NQE	0.24					0.2 µg/L (Basin Plan)
	Bis(2-ethylhexyl)phthalate	NQE			4.1			4 µg/L (Basin Plan)
	Dibenz(a,h)anthracene	NQE				0.1		0.0044 µg/L (CTR)
	Indeno(1,2,3-cd)pyrene	NQE				0.12		0.0044 µg/L (CTR)
	MBAS	NQE		1 (NQE)				0.5 mg/L (Basin Plan)
MO-FIL	*E. Coli*	NQE	10,462		17,329	253	2,613	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	30,000		30,000			400 MPN/100 mL (Basin Plan)
	Dissolved Oxygen	NQE				2.7		5 mg/L (Basin Plan)
	Aluminum	NQE			1,200			1,000 µg/L (Basin Plan)
	Selenium	NQE				**8**		5 mg/L (Basin Plan)
	Simazine	NQE		53 (NQE)				4 mg/L (Basin Plan)
MO-HUE	*E. Coli*	NQE	31,300	6,488	2,613	4,884		235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	35,000	11,000	2,800	9,000		400 MPN/100 mL (Basin Plan)
	Dissolved Oxygen	NQE	3.67	3.93				5 mg/L (Basin Plan)
	Aluminum	NQE			1,100			1,000 µg/L (Basin Plan)
DRY-HUE3	*E. Coli*	NR	NR	NR	NR	NR	14,136	235 MPN/100 mL (Basin Plan)
	Dissolved Oxygen	NR	NR	NR	NR	NR	2.73	5 mg/L (Basin Plan)
MO-MEI	*E. Coli*	NQE	15,531	NQE	12,997	Dry	Dry	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	22,000	NQE	16,000	Dry	Dry	400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	10,000	NQE	8,100	Dry	Dry	1,000 µg/L (Basin Plan)

Site		2012/13-1 (Wet)	2012/13-2 (Wet)	2012/13-3 (Wet)	2012/13-4 (Wet)	2012/13-5 (Dry)	2013-DRY	Applicable Standard
	Constituent	Value	Value	Value	Value	Value	Value	
DRY-UNI4	*E. Coli*	NR	NR	NR	NR	NR	12,033	235 MPN/100 mL (Basin Plan)
MO-MPK	*E. Coli*	NQE	**7,701**	NQE	**14,136**	Dry	2,143	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**16,000**	NQE	24,000	Dry		400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	**17,000**	NQE	**6,500**	Dry		1,000 µg/L (Basin Plan)
	Arsenic	NQE	11	NQE		Dry		10 µg/L (Basin Plan)
MO-OJA	Chloride ^			NQE		220		SSO: 60 mg/L (Basin Plan)
	Total Dissolved Solids ^			NQE		1,200		SSO: 800 mg/L (Basin Plan)
	E. Coli	6,867	**25,900**	NQE	**126,600**	6,131	4,352	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	9,000	**28,000**	NQE	**170,000**	5,000		400 MPN/100 mL (Basin Plan)
	Aluminum	12,000	3,400	NQE	6,000			1,000 µg/L (Basin Plan)
	Bis(2-ethylhexyl)phthalate			NQE	4.6			4 µg/L (Basin Plan)
MO-OXN	*E. Coli*	NQE	**17,329**	738 (NQE)	5,172	301		235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**24,000**	500 (NQE)	9,000			400 MPN/100 mL (Basin Plan)
	pH	NQE		9.06 (NQE)			9.08	8.5 pH units (Basin Plan)
	Aluminum	NQE	3,600	2,100 (NQE)				1,000 µg/L (Basin Plan)
	Copper, dissolved	NQE					55	Hardness default 400 mg/L,WQO 29.28 µg/L (CTR)
	Ammonia as N	NQE		1,400 (NQE)				pH 9.06, WQO 807 µg/L (Basin Plan)
	MBAS	NQE	0.97	1.2 (NQE)	2.1			0.5 mg/L (Basin Plan)
MO-SIM	Chloride ^	NQE				**170**		SSO: 150 mg/L (Basin Plan)
	Total Dissolved Solids ^	NQE				**2,200**		SSO: 850 mg/L (Basin Plan)
	E. Coli	NQE	**17,329**	**30,500 (NQE)**	**7,701**	789		235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**28,000**	**28,000 (NQE)**	9,000	900		400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	**3,200**	**2,100 (NQE)**	**4,300**			1,000 µg/L (Basin Plan)

Site		2012/13-1 (Wet)	2012/13-2 (Wet)	2012/13-3 (Wet)	2012/13-4 (Wet)	2012/13-5 (Dry)	2013-DRY	Applicable Standard
	Constituent	Value	Value	Value	Value	Value	Value	
	Selenium	NQE				41		5 µg/L (CTR)
MO-SPA	*E. Coli*	NQE	**24,192**	6,131 (NQE)	12,033	Dry		235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**30,000**	16,000 (NQE)	16,000	Dry		400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	5,500	6,100 (NQE)	**3,500**	Dry		1,000 µg/L (Basin Plan)
	Bis(2-ethylhexyl)phthalate	NQE			5.8			4 µg/L (Basin Plan)
	MBAS	NQE	0.58	0.73 (NQE)	1.1	Dry		0.5 mg/L (Basin Plan)
MO-THO	Chloride ^	NQE	190	**190**		**280**		SSO: 150 mg/L (Basin Plan)
	Total Dissolved Solids ^	NQE	980	980		**1,300**		SSO: 850 mg/L (Basin Plan)
	E. Coli	NQE	**14,600**	**3,654**	**408**	246	309	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**28,000**	**3,000**	160			400 MPN/100 mL (Basin Plan)
	Aluminum	NQE	**4,800**	**4,300**	**5,000**			1,000 µg/L (Basin Plan)
MO-VEN	*E. Coli*	NQE	**24,192**	9,208 (NQE)	3,448		364	235 MPN/100 mL (Basin Plan)
	Fecal Coliform	NQE	**24,000**	22,000 (NQE)	9,000			400 MPN/100 mL (Basin Plan)
	pH	NQE					8.51	8.5 pH units (Basin Plan)
	Aluminum	NQE	4,400	4,000 (NQE)	**1,700**			1,000 µg/L (Basin Plan)
	Arsenic	NQE				13		10 µg/L (Basin Plan)
	Copper, dissolved	NQE				56	74	Event 5 and 2013-DRY: Hardness default 400 mg/L,WQO 29.28 µg/L (CTR)
	Selenium	NQE				**18**		5 µg/L (CTR)
	Bis(2-ethylhexyl)phthalate	NQE			5.5			4 mg/L (Basin Plan)
	MBAS	NQE	0.63	0.7 (NQE)	1.1			0.5 mg/L (Basin Plan)

Note: All metals are total unless otherwise stated

NR: Not Required, Not Sampled

* DNQ

^ Site Specific Objectives

NQE: Non Qualifying Event (insufficient rainfall). MO-OJA was the only site that received sampleable rainfall on October 11, 2012 (Event 2012/13-1). For this reason, there are no corresponding receiving water results for this storm, or results for other Program site. The 2012/13-2 event was forecast >0.25" rainfall, however actual rainfall was sparse and patchy, with only 5 of 14 sites receiving qualifying (≥0.15") rainfall. Six sites were sampled and analyzed but received less than 0.15" rainfall so are not qualifying samples, per the terms of the Permit.

Highlighted: Exceedance of same constituent in related receiving water (mass emission)

9.7.3 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.

9.7.4 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 2012/13 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 9-18 and Table 9-19 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 where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold. MO-OJA was the only site with sufficient rainfall to sample during Event 2012/13-1, so there are no receiving water comparisons able to be made for that event.

Table 9-18: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	15,531	1,178	235	BP
Fecal Coliform (MPN/100 mL)	22,000	1,600	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
E. coli (MPN/100 mL)	N/A	N/A	235	BP
Fecal Coliform (MPN/100 mL)	N/A	N/A	400	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	12,997	987	235	BP
Fecal Coliform (MPN/100 mL)	16,000	900	400	BP
2012/13-5 (Dry) – Apr 30, 2013				
2,4-Dinitrotoluene (µg/L)	N/A	0.45 (DNQ)	0.11	CTR

Table 9-19: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	25,900	1,178	235	BP
Fecal Coliform (MPN/100 mL)	28,000	1,600	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
E. coli (MPN/100 mL)	N/A	N/A	235	BP
Fecal Coliform (MPN/100 mL)	N/A	N/A	400	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	126,600	987	235	BP
Fecal Coliform (MPN/100 mL)	170,000	900	400	BP
2012/13-5 (Dry) – Apr 30, 2013				
2,4-Dinitrotoluene (µg/L)	<0.18	0.45 (DNQ)	0.11[15]	CTR

9.7.5 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 2012/13 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 9-20 through Table 9-23 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold. MO-OJA was the only site with sufficient rainfall to sample during Event 2012/13-1, so there are no receiving water comparisons able to be made for that event.

[15] MDL is higher than CTR Objective

Table 9-20: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	10,462	472	235	BP
Fecal Coliform (MPN/100 mL)	30,000	700	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
NQE	NQE	NQE	N/A	N/A
2012/13-4 (Wet) – Mar 8, 2013				
Aluminum, Total (µg/L)	1,200	79,000	1,000	BP
2012/13-5 (Dry) – Apr 23, 2013				
Selenium, Total (µg/L)	8	5.2	5	CTR

Table 9-21: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	24,192	472	235	BP
Fecal Coliform (MPN/100 mL)	30,000	700	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
NQE	NQE	NQE	N/A	N/A
2012/13-4 (Wet) – Mar 8, 2013				
Aluminum, Total (µg/L)	3,500	79,000	1,000	BP
2012/13-5 (Dry) – Apr 23, 2013				
Selenium, Total (µg/L)	N/A	5.2	5	CTR

Table 9-22: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	472	17,329	235	BP
Fecal Coliform (MPN/100 mL)	700	24,000	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
NQE	NQE	NQE	N/A	N/A
2012/13-4 (Wet) – Mar 8, 2013				
Aluminum, Total (µg/L)	79,000	930	1,000	BP
2012/13-5 (Dry) – Apr 23, 2013				
Selenium, Total (µg/L)	5.2	N/A	5	CTR

[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.

Table 9-23: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	472	24,192	235	BP
Fecal Coliform (MPN/100 mL)	700	24,000	400	BP
2012/13-3 (Wet) – Feb 19, 2013				
NQE	NQE	NQE	N/A	N/A
2012/13-4 (Wet) – Mar 8, 2013				
Aluminum, Total (µg/L)	79,000	1,700	1,000	BP
2012/13-5 (Dry) – Apr 23, 2013				
Selenium, Total (µg/L)	5.2	18	5	CTR

[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.

9.7.6 **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 2012/13 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 9-24, Table 9-25, Table 9-26, and Table 9-27 below. Receiving water exceedances where the urban runoff from the applicable Major Outfalls was outside of WQS are shown in bold. MO-OJA was the only site with sufficient rainfall to sample during Event 2012/13-1, so there are no receiving water comparisons able to be made for that event.

Table 9-24: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	7,701	11,199	235	BP
Fecal Coliform (MPN/100 mL)	16,000	16,000	400	BP
Aluminum, Total (µg/L)	17,000	2,200	1,000	BP
2012/13-3 (Wet) – Feb 19, 2013				
Chloride (mg/L)	DRY	160	150	BP
E. coli (MPN/100 mL)	DRY	373	235	BP
Fecal Coliform (MPN/100 mL)	DRY	2,400	400	BP
Aluminum, Total (µg/L)	DRY	1,100	1,000	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	14,136	341	235	BP
Aluminum, Total (µg/L)	6,500	2,400	1,000	BP
2012/13-5 (Dry) – May 23, 2013				
Chloride (mg/L)	DRY	250	150	BP
Total Dissolved Solids (mg/L)	DRY	1,100	850	BP

Table 9-25: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	17,329	11,199	235	BP
Fecal Coliform (MPN/100 mL)	28,000	16,000	400	BP
Aluminum, Total (µg/L)	3,200	2,200	1,000	BP
2012/13-3 (Wet) – Feb 19, 2013				
Chloride (mg/L)	37 (NQE)	160	150	BP
E. coli (MPN/100 mL)	30,500 (NQE)	373	235	BP
Fecal Coliform (MPN/100 mL)	28,000 (NQE)	2,400	400	BP
Aluminum, Total (µg/L)	2,100 (NQE)	1,100	1,000	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	7,701	341	235	BP
Aluminum, Total (µg/L)	4,300	2,400	1,000	BP
2012/13-5 (Dry) – May 23, 2013				
Chloride (mg/L)	DRY	250	150	BP
Total Dissolved Solids (mg/L)	DRY	1,100	850	BP

Table 9-26: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	14,600	11,199	235	BP
Fecal Coliform (MPN/100 mL)	28,000	16,000	400	BP
Aluminum, Total (µg/L)	4,800	2,200	1,000	BP
2012/13-3 (Wet) – Feb 19, 2013				
Chloride (mg/L)	190	160	150	BP
E. coli (MPN/100 mL)	3,654	373	235	BP
Fecal Coliform (MPN/100 mL)	3,000	2,400	400	BP
Aluminum, Total (µg/L)	4,300	1,100	1,000	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	408	341	235	BP
Aluminum, Total (µg/L)	5,000	2,400	1,000	BP
2012/13-5 (Dry) – May 23, 2013				
Chloride (mg/L)	280	250	150	BP
Total Dissolved Solids (mg/L)	1,300	1,100	850	BP

Table 9-27: 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)	
2012/13-1 (Wet) – Oct 11, 2012				
N/A	N/A	N/A	N/A	N/A
2012/13-2 (Wet) –Nov 17, 2012				
E. coli (MPN/100 mL)	11,199	10,462	235	BP
Fecal Coliform (MPN/100 mL)	16,000	17,000	400	BP
Aluminum, Total (µg/L)	2,200	6,600	1,000	BP
2012/13-3 (Wet) – Feb 19, 2013				
Chloride (mg/L)	160	26	150	BP
E. coli (MPN/100 mL)	373	743 (NQE)	235	BP
Fecal Coliform (MPN/100 mL)	2,400	700 (NQE)	400	BP
Aluminum, Total (µg/L)	1,100	4,800 (NQE)	1,000	BP
2012/13-4 (Wet) – Mar 8, 2013				
E. coli (MPN/100 mL)	341	6,131	235	BP
Aluminum, Total (µg/L)	2,400	1,500	1,000	BP
2012/13-5 (Dry) – May 23, 2013				
Chloride (mg/L)	250	190	150[b]	BP
Total Dissolved Solids (mg/L)	1,100	1,200	850[b]	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. There are no waterbody specific objectives below the confluence of Revolon Slough and Calleguas Creek. Therefore, the level of chloride and total dissolved solids at MO-CAM are not flagged as elevated in Table 9-17 but are flagged here because they are above the BP objective for ME-CC.

[c] Site-specific Basin Plan objective for Revolon Slough.

9.7.7 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 9-17 and not in a separate table as there is not a Mass Emission station nearby to which comparisons would be relevant.

9.7.8 Discussion of Results above Water Quality Standards

Aluminum, *E. coli* and fecal coliform were commonly found at elevated levels at most sites during wet-weather events. *E. coli* and fecal coliform concentrations were also often elevated during dry-weather events, but aluminum concentrations were not. Other constituents that were found at elevated levels during the 2012/13 monitoring season include chloride and total dissolved solids (predominantly during the dry-weather event), dissolved oxygen, dissolved copper (dry season only), total arsenic, total selenium, ammonia, bis(2-

ethylhexyl)phthalate, MBAS, and pH (predominantly dry weather). Constituents that were seen at elevated levels at Major Outfalls only once during the season include benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and simazine. Constituents that were seen at elevated levels at Mass Emission stations only once during the season include 2,4-Dinitrotoluene and the metals (total) arsenic, beryllium, cadmium, chromium, nickel, and thallium. The Program is using this information to identify pollutants of concern and direct efforts to reduce their discharge from the storm drain system. Individually, the Permittees have taken, or are committing to take specific actions such as studies, or the purchasing of new equipment to address pollutants found in their outfalls that may be causing or contributing to an exceedance of a water quality standard, or is only seen at an elevated level in their outfall, but not in the receiving water. These are detailed in Section 9.7.9 below

Pathogen Indicators

Urban runoff concentrations of *E. coli* and fecal coliform bacteria were detected above their respective Basin Plan objectives in all Major Outfall wet weather samples with one exception, *E. coli* and fecal coliform bacteria were both below the Basin Plan objectives for MO-FIL in Event 3, however this sample did not meet the 0.15" rainfall threshold for a qualifying storm event. Wet weather receiving water exceedances were less consistent, with all three sites above the objectives for both *E. coli* and fecal coliform bacteria during the first flush (Event 2) and only one site was above objectives (both *E. coli* and fecal coliform bacteria) in Event 3 (ME-CC). Two sites exceeded the *E. coli* objectives in Event 4 (ME-CC and ME-VR2), and ME-VR2 also exceeded the fecal coliform bacteria objectives in the same event. These indicator bacteria are routinely measured at concentrations in excess of WQS during wet weather events.

Concentration levels were often lower, however, for dry weather monitoring during the 2012/13 season. No dry weather bacteria exceedances were observed at the receiving water stations. All Major Outfall stations exhibited concentrations of fecal indicator bacteria above Basin Plan objectives during at least one dry weather monitoring event (Event 5 and/or 2013-DRY) with the exception of MO-VEN. A lack of flow precluded dry event sampling at MO-MEI and MO-MPK for both dry events and at MO-SPA for Event 5.

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 *2013 End of Summer Beach Report Card* stating "Summer dry and winter dry weather water quality grades in Ventura County were excellent this past year, with 100% of all locations receiving A grades for both time periods. Wet weather water quality was also excellent with 20 of 21 (95%) locations receiving A or B grades. This year Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods."

Table 9-28 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 (Wet)	Event 5 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance – Event 5 (Dry)					
ME-CC	Dry	X	X	*E. coli* only	
MO-CAM	Dry	X	X (NQE)	X	X
MO-MPK	Dry	X	Dry	X	Dry
MO-SIM	Dry	X	X (NQE)	X	X
MO-THO	Dry	X	X	X	*E. coli* only
Santa Clara River Watershed Outfalls not causing or contributing to exceedance – Event 3 and 5(Wet), and Event 5 (Dry)					
ME-SCR	Dry	X	(NQE)		
MO-FIL	Dry	X	(NQE)	X	*E. coli* only
MO-OXN	Dry	X	X (NQE)	X	*E. coli* only
MO-SPA	Dry	X	X (NQE)	X	Dry
MO-VEN	Dry	X	X (NQE)	X	
Ventura River Watershed Outfalls not causing or contributing to exceedance – Event 3 (Wet) and Event 5 (Dry)					
ME-VR2	Dry	X	Dry	X	
MO-OJA	X	X	Dry	X	X
MO-MEI	Dry	X	Dry	X	Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance					
MO-HUE	Dry	X	X	X	X
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain					

Bacteriological contamination is a common occurrence throughout California and the United States. However, a number of issues make compliance with existing standards challenging:

- The water quality standards are based on fecal indicator bacteria, not the actual pathogenic micro-organisms that can cause illness. As a result, it is difficult to ascertain whether a particular water concentration of indicator bacteria is associated with an increased risk of human illness. This complicates establishment of priority watersheds or drainage areas, and introduces considerable risk of spending significant amounts of resources to comply with bacteria standards but with little to no benefit to recreational beneficial uses.
- Urban (anthropogenic) sources, wildlife, bacterial regrowth and other non-urban sources all potentially contribute fecal indicator bacteria to outfalls and receiving waters. However, identifying the sources of bacteria impairment through sanitary surveys and source identification studies are costly and not always conclusive, as the science is still evolving.
- Even if likely dominant sources of fecal indicator bacteria can be identified, remediation or control of these sources is often difficult, e.g. high volumes of stormwater runoff, bacterial regrowth, wildlife. There are only a limited number of BMPs that can effectively control fecal indicator bacteria pollution to these objectives, and they may not always be technically feasible at a given location.

Implementation of bacteria control strategies and BMPs

The Ventura Countywide Stormwater Quality 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, equestrian supply stores, and horse property owners. The brochure identified BMPs that horse owners should take to reduce bacteria in stormwater runoff. Section 3 - Public Outreach describes in detail the outreach conducted during the 2012/13 year. The Permittees also 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 likely also help to reduce bacteria in stormwater runoff by identifying and stopping illicit wastewater discharges. As indicator bacteria present may also grow in natural environments and sediments, measures to prevent sediment transport may also help reduce bacteria in stormwater runoff. Steps to remove sediment from the storm drain system through street sweeping, catch basin cleaning, and maintenance of debris basin and publicly owned BMPs. Industrial and commercial inspections, construction inspection, and illicit discharge response and elimination therefore also represent significant efforts towards reducing the discharge of fecal indicator bacteria. 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 have conducted field efforts to track bacteriological contamination detected at the Major Outfalls. General conclusions were that the data evaluation did not indicate specific identifiable sources because elevated concentrations were determined throughout the tested subwatershed areas (Section 9.9.2).

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 also 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 discharges 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.

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[16]. 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.

As a means to better refine the implementation of BMPs that might result in additional reductions of indicator bacteria, the Permittees are performing source identification monitoring at Major Outfalls and Mass Emission stations in the 2013/14 Permit year. This county-wide fecal indicator bacteria source identification study has the goal to assess county-wide dry and wet weather sources of fecal pollution in receiving waters, MS4 and control sites, in order to provide a regional assessment framework, inform future local studies and BMP implementation efforts. Dry and wet weather receiving water sampling will be performed as part of the Bight '13 Microbiology study. Additional wet weather sampling will be performed at all major outfall and several control stations. A design for dry weather sampling at MS4 and control sites will be developed with assistance from SCCWRP. Sampling is anticipated to start in the 2013/2014 winter season. The study will include quantification of *E. coli* and up to three host-specific markers (including human, dog, horse and bird).

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.

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 2012/13 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 but no receiving water stations were above the objective for the dry event (Event 5). Aluminum is not analyzed for the dry season monitoring event, 2013-DRY. All Major Outfall station wet weather samples in the Calleguas Creek Watershed were above the Basin Plan objective. In the Santa Clara River Watershed, all wet weather major outfall station samples were above the objective with the exception of MO-FIL (Events 2 & 3(NQE)) and MO-OXN (Event 4). 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 9-32.

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 (a Title 22 drinking water objective). This is clearly shown by the highly elevated wet weather concentrations of the metal measured in all three watersheds monitored by the

[16] http://www.calleguascreek.org/ccwmp/4f.asp November 3, 2011.

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).[17] Based on the elevated levels of total aluminum measured in Ventura County surface waters, it is useful to have an understanding of total aluminum concentrations measured in the County's soils since the earlier evaluations of average TSS concentrations and the correlation analyses showed that suspended solids, certainly containing soil particles and fine sediments, were observed to increase substantially in combination with total aluminum and flows during wet weather events. An online search for Ventura County soils data containing total aluminum concentrations resulted in the acquisition of data from only three monitoring programs: the Southern California Bight Monitoring Program (lead by SCCWRP), the Southern California Stormwater Monitoring Coalition (SCSWMC), and the State's Surface Ambient Monitoring Program (SWAMP). All soils data were queried from the California Environmental Data Exchange Network (CEDEN) online database. Soils data were available for all three watersheds monitored by the District, with most data obtained from the Santa Clara River Watershed. Total aluminum soils data were reported as single or multiple concentration measurements at each monitoring site. An average concentration was calculated for those monitoring sites where multiple measurements were provided in CEDEN. Soil samples were collected adjacent to water bodies in each watershed. Table 9-29 shows soil total aluminum concentrations at 14 monitoring sites in Ventura County. The total aluminum concentrations shown in Table 9-30 range from 6,820,000 µg/kg (Santa Paula Creek, Santa Clara River Watershed) to 105,692,500 µg/kg (average value at Calleguas Creek Main Stem, Calleguas Creek Watershed).

Table 9-29 Total Aluminum Soil Concentrations at Monitoring Locations in Ventura County.

Watershed	Monitoring Site	Total Al (µg/kg)	Monitoring Program
Ventura	Ventura River Bio 0	75,894,500 avg (4)	SWAMP

[17] Shacklette, H. T. and Hansford, J. G. (1984). Elemental concentrations in soils and other surficial materials of the conterminous United States, U.S. Geological Survey Professional Paper 1270

River	Ventura River Estuary	34,764,000	SWAMP
Santa Clara River	Sespe (Upper) 02363	36,080,000	SCSWMC
	Piru Creek 02764	20,646,000	SCSWMC
	Newhall Ranch Blue Cut	38,200,000 avg (2)	SWAMP
	Piru Creek	47,200,000	SWAMP
	Sespe Creek 04868	46,519,000	SCSWMC
	Sepse Creek	75,238,600 avg (5)	SWAMP
	Santa Paula Creek	6,820,000	SCSWMC
	Santa Clara River Estuary	63,869,400 avg (5)	SWAMP
	Ventura Marina 4	64,180,000	SWAMP
Calleguas Creek	Calleguas Ck below Camrosa WWTP	50,195,750 avg (4)	SWAMP
	Calleguas Creek Main Stem	105,692,500 avg (2)	SWAMP
	B08-6543	15,300,000 avg (6)	SoCal Bight

Numbers shown parenthetically for average total aluminum concentrations represent the number of data points used in calculating an average concentration.

As a means to compare total aluminum water column concentrations measured in the surface waters of the three watersheds to total aluminum soil concentrations measured in the watersheds, it is first necessary to determine the mass of total aluminum per mass of TSS measured in a water quality sample. Paired total aluminum and TSS results from wet weather events were used to calculate µg of total aluminum per kg of TSS. These µg/kg results calculated for all paired data were then averaged across each watershed. It was assumed that all aluminum measured in a water quality sample existed in the total fraction, which is close to the average 98.4 percent of measured aluminum that was calculated to exist in the total fraction across all wet weather samples collected across all VCWPD monitoring sites. The information presented in Table 9-30 allows for a comparison of the mass of total aluminum per mass of total solids measured in water column and soil samples collected in the three watersheds.

Table 9-30: Mass of Total Aluminum per Mass of Total Solids Measured in Water Column and Soil Samples Collected in Ventura County.

Watershed	Average Total Al per TSS (µg/kg) Measured in Water	Range of Total Al Concentrations (µg/kg) Measured in Soil
Ventura River	24,129,972	34,764,000 – 75,894,500
Santa Clara River	29,731,875	6,820,000 – 75,238,600
Calleguas Creek	24,314,428	15,300,000 – 105,692,500

The range of total aluminum soil concentrations shown in Table 9-30 is in line with concentrations identified in two separate surveys of California soils. The first is a 1996 California Benchmark Soils Study that reported a mean total aluminum concentration across California soils of 73,000,000 µg/kg, along with a minimum of 30,000,000 µg/kg and a maximum of 106,000,000 µg/kg (Kearney, 1996). The second study[18] is a survey of 14

[18] The study focused on uncontaminated sample locations to gain an understanding of background (naturally occurring) concentrations of inorganic chemicals to use for comparison against known contaminated sites in risk assessment and risk management work carried out by the Air Force.

Air Force installations in 10 California counties that reported a mean, depth-integrated total aluminum concentration of 7,560,000 µg/kg and a 95th percentile concentration of 23,000,000 µg/kg (Hunter and Davis, 2001; Hunter et al., 2005). Hunter et al. reported that total aluminum soil concentrations vary with depth in the soil profile, and measured total aluminum concentrations were greatest in soil samples collected from 3 feet to 15 feet below ground level. Mean total aluminum concentrations were moderately lower in soil samples collected from the surface to a depth of 3 feet, and appreciably lower in soil samples collected deeper than 15 feet from the surface as compared to samples collected in the middle strata (3 – 15 feet). Total aluminum soil concentrations reported between the two studies bookend the range of concentrations measured in Ventura County. Furthermore, the average mass of total aluminum per mass of TSS in the water column that was calculated for the three watersheds appears to be consistent with the range of total aluminum soil concentrations measured in the three watersheds. Stated differently, there do not appear to be total aluminum water column concentrations measured in the various watersheds that are in excess of the concentration of total aluminum that could be contributed from the erosion of area soils. These observations in combination with the earlier evaluation that showed a high correlation between total aluminum and TSS concentrations measured in Program water quality samples suggests that the total aluminum measured in water quality samples is derived from the erosion of soil.

In addition, wet-weather total aluminum concentrations are significantly correlated with Total Suspended Solids (TSS) concentrations. Given that a TSS concentration of 500 mg/L results 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.

The above analyses suggest that total aluminum measured in dry and wet weather water quality samples collected by the District and others is derived from the erosion of area soils. It is currently unknown if anthropogenic activities occurring in the three watersheds hasten the transport of sediments to surface waters at a rate greater than natural erosion processes in the watersheds contribute sediments to local water bodies. So far sites visited by the Program are not upstream of areas influenced by anthropogenic activities. This creates a data gap in the District's database that would be helpful to close. It has been suggested that additional aluminum data be collected from new monitoring locations that represent land uses little affected by human activities. SCCWRP has recently identified several potential "reference stream" monitoring locations in Ventura County that it may monitor in support of an ongoing project it has in San Diego County. SCCWRP is looking to monitor sites in Ventura County that meet specific criteria for being undisturbed by human activities. District staff has evaluated locations within each of the three watersheds it monitors that lie upstream of existing monitoring sites for the purpose of collecting water quality samples for aluminum analysis that would be little influenced by anthropogenic activities upstream of the site of collection. The potential monitoring locations for the collection of additional aluminum data are listed in

Table 9-31 and shown in Table 9-32.

Table 9-31: Potential Monitoring Locations for Collection of Additional Aluminum Data.

Site Name/Location	Watershed	Potential Monitoring Agency

Upstream of Las Llajas Dam	Calleguas	VCWPD
Happy Camp Canyon	Calleguas	VCWPD
Sisar Creek off of Sisar Road in Upper Ojai	Santa Clara	VCWPD
Sespe Creek near the Piedra Blanca Trailhead (near Rose Valley)	Santa Clara	VCWPD
Sespe Creek at the end of Grand Avenue	Santa Clara	VCWPD
Canada Larga Canyon off of Canada Larga Road	Ventura	VCWPD
Matilija Canyon at the Forest Service Gate	Ventura	SCCWRP
North Fork Matilija Canyon at Hwy 33 above Wheeler Gorge Campground	Ventura	SCCWRP

With regard to District monitoring activities, grab samples from sites in the Santa Clara River and Calleguas Creek watersheds would be collected during the 2013/14 monitoring season. If SCCWRP monitors two sites in the Ventura River Watershed that it has classified as meeting its criteria for a reference stream, then the District would use these data in its continued background characterization of aluminum and would not embark on its own new monitoring effort in this watershed. It is planned for the District analyze for total and dissolved aluminum, TSS, and turbidity when visiting the new upstream monitoring locations it has identified (see

Table 9-31). The District is also going to collect streambed sediment samples during base flow conditions to assess whether total aluminum concentrations in sediments are high relative to water column concentrations.The results of these studies will be included in the 2014 Annual Report.

Table 9-32 Aluminum detected above Basin Plan Objective

Aluminum detected above Basin Plan Objective					
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance –Event 5 (Dry)					
ME-CC	Dry	X	X	X	
MO-CAM	Dry	X	X (NQE)	X	
MO-MPK	Dry	X	Dry	X	Dry
MO-SIM	Dry	X	X (NQE)	X	
MO-THO	Dry	X	X	X	
Santa Clara River Watershed Outfalls not causing or contributing to exceedance – Events 2 and 3 (Wet) and Event 5 (Dry)					
ME-SCR	Dry		(NQE)	X	
MO-FIL	Dry		(NQE)	X	
MO-OXN	Dry	X	X (NQE)		
MO-SPA	Dry	X	X (NQE)	X	Dry
MO-VEN	Dry	X	X (NQE)	X	
Ventura River Watershed Outfalls not causing or contributing to exceedance					
ME-VR2	Dry		Dry		
MO-OJA	X	X	Dry	X	
MO-MEI	Dry	X	Dry	X	Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance					
MO-HUE	Dry			X	
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain					

Copper

Using the approach discussed in Section 9.6.3, there were only three major outfall samples with elevated levels of dissolved copper during the 2012/13 monitoring season, MO-OXN during Event 5 (dry) and MO-VEN during Event 5 (dry) and 2013-DRY. No results above the CTR Criterion for dissolved copper were observed during wet weather at the major outfalls or during wet or dry weather at the receiving water stations during the 2012/13 season. Based on the "cause or contribute" methodology, copper from urban outfalls was not determined to persistently cause or contribute to WQS exceedances. 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 2012/13 monitoring season.

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.

Mercury

In 2011/12, 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 (2,000 ng/L) at any of the major outfalls or receiving water stations during wet and dry weather for the 2012/13 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 4 for total arsenic, beryllium, cadmium, chromium, nickel, and thallium concentrations. This was the only occurrence of elevated levels of these metals at any of the Program's sites for the 2012/13 monitoring year (with the exception of arsenic at MO-MPK in Event 2 and MO-VEN in Event 5). For the metals detected above WQS in the 2012/13 monitoring year at ME-SCR, the number of samples with elevated levels to date are as follows: arsenic (10 of 64 samples, previous exceedance 2011/12-3), beryllium (1 of 24 samples, no previous exceedance), cadmium (9 of 64 samples, previous exceedance 2011/12-3), chromium (5 of 64, previous exceedance 2011/12-3), nickel (6 of 64, previous exceedance 2011/12-3), and thallium (1 of 64 samples, no previous exceedance). The associated Major Outfalls have been determined not to have caused or contributed to the exceedance of the WQS, since concentrations were consistently below the WQS.

The exact sources of the arsenic, beryllium, cadmium, chromium, nickel and thallium exceedances at ME-SCR during Event 4 are elusive, but are not considered to be from the MS4s. 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 4. Potential anthropogenic sources of cadmium, chromium and nickel in urbanized watersheds include roof runoff (from roof materials, industrial emissions deposits or atmospheric deposition)[19,20] and road/highway runoff (fuels and engine oils, exhaust emissions, tire and brake wear).[21] Beryllium is used in metal alloys for the aerospace industry, and electrical equipment. Arsenic is used in paints, dyes, metals, drugs, semi-conductors, fertilizers, and

[19] 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.

[20] http://www.sanjoseca.gov/ArchiveCenter/ViewFile/Item/1460

[21] Opher, T. and Friedler, E. (2010). Factors affecting highway runoff quality, Urban Water Journal 7:155-172.

as a wood preservative. Sources of cadmium include corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; and runoff from waste batteries and paints. Chromium is used for making steel, alloys, dyes and pigments, and in leather and wood preservation and chrome plating. Nickel is mostly used to form alloys, and can be used in chemicals and allied products, petroleum refining, fabricated metal products, aircraft parts, machinery, household appliances, building construction, electrical equipment, motor vehicle construction, and ship building. Nickel can be produced through oil and coal combustion, nickel metal refining, sewage sludge incineration, manufacturing facilities, and other sources. Thallium is used in specialized electronic research equipment, and can be released by leaching from ore-processing sites, and discharged from electronics, glass, and drug factories.

Selenium was detected above the CTR objective during dry weather Event 2012/13-5 at four sites: ME-SCR, MO-FIL, MO-SIM, and MO-VEN. The elevated levels at ME-SCR, MO-FIL and MO-VEN indicate that there may be a cause or contribute relationship for selenium at these sites, although not a persistent one. Sources of selenium include discharge from petroleum and metal refineries, erosion of natural deposits, and discharge from mines. Selenium is used in electronic and photocopier components, glass, pigments, rubber, metal alloys, textiles, petroleum, medical therapeutic agents, and photographic emulsions. Selenium is known to occur at elevated levels in Monterey Formation rocks (Miocene marine mudstone) which are common in Ventura County. The relative contributions of anthropogenic and natural sources to elevated selenium concentrations are not clear at this point.

Efforts to reduce metals in urban runoff

Because total metal fractions 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 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 reduce the overall transport of pollutants including sediment and dry weather runoff both which if reduced would also reduce metals. Current efforts can be further tailored to address sources of metals such as promoting household hazardous waste collection events to dispose of mercury containing compact fluorescent light bulbs and thermometers. 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[22]. 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 wet events in the 2012/13 season, benzo(a)pyrene at MO-CAM during Event 2 and bis(2-ethylhexyl)phthalate at MO-CAM, MO-OJA, MO-SPA, and MO-VEN during Event 4. Three organic compounds were detected at elevated levels during the 2012/13-5 dry event, 2,4-Dinitrotoluene (DNQ) at ME-VR2, and dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene at MO-CAM.

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. A small fraction of method and equipment blanks have shown concentrations in the range of observed sample concentrations since 2009however the method blank for this batch was ND. Therefore, it is unclear at this point whether bis(2-ethylhexyl)phthalate detects are caused by sampling or laboratory contamination. Benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene are polycyclic aromatic hydrocarbons (PAH) that are produced by incomplete combustion and are found in fossil fuels. They are 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 is suspected to have been deposited from a residential fire which occurred approximately 1.5 miles upstream of the monitoring station. The fire was on November 10 and no significant rain fell after the fire until Event 2 on November 17. The only compound detected above the WQS in the receiving water was 2,4-dinitrotoluene and it was not above WQS at the related major outfalls so there does not appear to be a cause or contribute link for the WQS exceedance. Each compound was only detected once during the 2012/13 season so they are not considered persistent.

The only pesticide detected above WQS during the 2012/13 season was simazine at MO-FIL during Event 3 (NQE). The lack of exceedances for this pollutant at the receiving water station indicates that simazine concentrations in wet weather urban runoff did not affect downstream receiving water beneficial uses.

[22] http://www.calleguascreek.org/ccwmp/4d.asp November 3, 2011.

Table 9-33 Organics and Pesticides detected above Basin Plan and/or CTR Objectives

Organics and Pesticides detected above Water Quality Standards					
Site	Event 1 (Wet)	Event 2 (Wet)	Event 3 (Wet)	Event 4 (Wet)	Event 5 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance					
ME-CC	Dry				
MO-CAM	Dry	Benzo(a)pyrene	(NQE)	Bis(2-ethylhexyl)phthalate	Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene
MO-MPK	Dry		Dry		Dry
MO-SIM	Dry		(NQE)		
MO-THO	Dry				
Santa Clara River Watershed Outfalls not causing or contributing to exceedance					
ME-SCR	Dry		(NQE)		
MO-FIL	Dry		(NQE)		
MO-OXN	Dry		(NQE)		
MO-SPA	Dry		(NQE)	Bis(2-ethylhexyl)phthalate	Dry
MO-VEN	Dry		(NQE)	Bis(2-ethylhexyl)phthalate	
Ventura River Watershed Outfalls not causing or contributing to exceedance					
ME-VR2	Dry		Dry		2,4-Dinitrotoluene
MO-OJA			Dry	Bis(2-ethylhexyl)phthalate	
MO-MEI	Dry		Dry		Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance					
MO-HUE	Dry				
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain					

Salts

Concentrations observed above WQS for salts (chloride and total dissolved solids) in the watersheds monitored by the Program were limited to dry weather Event 5 (with the exception of chloride only at ME-CC in wet Event 3). This is in accordance with historical data from dry weather events, when flows are comprised of a larger groundwater component. In the Ventura River Watershed, concentrations above the Basin Plan site-specific objectives (SSO) of 60 mg/L for chloride and 800 mg/L for total dissolved solids (TDS) were seen at the MO-OJA major outfall during dry weather Event 5, however the Ventura River at the ME-VR2 receiving water station did not have an exceedance of its corresponding SSO of 300 mg/L for chloride and 1500 mg/L TDS. In the Santa Clara River Watershed, chloride was detected above the SSO of 80 mg/L at ME-SCR during Event 5; however it was not detected above the corresponding SSO for the major outfalls, 80 mg/L at MO-FIL and MO-SPA. In the Calleguas Creek Watershed, the SSO for chloride (150 mg/L) and TDS (850 mg/L) were exceeded at ME-CC and at two of the corresponding major outfalls, MO-SIM and MO-THO.

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 2012/13 season. Since levels of TDS and chloride were seen above the SSO at the receiving water station ME-CC and at the major outfalls MO-SIM and MO-THO during dry Event 5, so the urban runoff is likely

to have contributed to the exceedance of the Basin Plan Objectives for chloride and TDS in the receiving water during dry weather Event 5. The area of Simi Valley is known to have high ground water levels 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. However, it is clear that historic monitoring data collected during dry weather sampling events show regular elevated levels of chloride and total dissolved solids concentrations in the Calleguas Creek Watershed, therefore it can be concluded that the issue is a persistent one.

Table 9-34 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 (Wet)	Event 5 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance – Event 3 (Wet) and Event 5 (Dry)					
ME-CC	Dry		Chloride only		X
MO-CAM	Dry		(NQE)		
MO-MPK	Dry		Dry		Dry
MO-SIM	Dry		(NQE)		X
MO-THO	Dry				X
Santa Clara River Watershed Outfalls not causing or contributing to exceedance					
ME-SCR	Dry		(NQE)		Chloride only
MO-FIL	Dry		(NQE)		
MO-OXN	Dry		(NQE)		
MO-SPA	Dry		(NQE)		Dry
MO-VEN	Dry		(NQE)		
Ventura River Watershed Outfalls not causing or contributing to exceedance					
ME-VR2	Dry		Dry		
MO-OJA			Dry		X
MO-MEI	Dry		Dry		Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance					
MO-HUE	Dry				
Dry – Not sampled during this event due to insufficient flow and/or rainfall at site NQE – Non-Qualifying Event with less than 0.15 inches of rain 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, a program all Permittees have. 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 (Event 5) and MO-HUE (Events 2 and 3). The most probable 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 during dry weather). The low levels at MO-FIL and MO-HUE are not unexpected as the conditions at both locations create standing water where, even during storm conditions, 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 2012/13 season, which 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 wet weather at MO-OXN during Event 3 (NQE) and at MO-CAM during dry weather Event 5. 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 2012/13 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.

Methylene Blue Active Substances (MBAS) was measured above the Basin Plan Objective of 5 mg/L at several major outfalls during wet events in the 2012/13 season. MBAS measures anionic surfactants (i.e. detergents or foaming agents). Possible sources include residential car washing and cleaning of restaurant mats and outdoor areas. It was seen at sites with predominantly hardscape surfaces with high density residential and/or commercial land use. These issues are routinely the subject of the Business Inspection Program and Illicit Discharge Investigations.

Table 9-35 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 (Wet)	Event 5 (Dry)
Calleguas Creek Watershed Outfalls not causing or contributing to exceedance					
ME-CC	Dry				
MO-CAM	Dry		MBAS (NQE)		pH Ammonia-N
MO-MPK	Dry		Dry		Dry
MO-SIM	Dry		(NQE)		
MO-THO	Dry				
Santa Clara River Watershed Outfalls not causing or contributing to exceedance					
ME-SCR	Dry		(NQE)		
MO-FIL	Dry		(NQE)		Dissolved Oxygen
MO-OXN	Dry	MBAS	pH (NQE) Ammonia-N (NQE) MBAS (NQE)	MBAS	
MO-SPA	Dry		MBAS (NQE)	MBAS	Dry
MO-VEN	Dry	MBAS	MBAS (NQE)	MBAS	
Ventura River Watershed Outfalls not causing or contributing to exceedance					
ME-VR2	Dry		Dry		
MO-OJA			Dry		
MO-MEI	Dry		Dry		Dry
Coastal Watershed Unknown if outfall causing or contributing to exceedance					
MO-HUE	Dry	Dissolved Oxygen	Dissolved Oxygen		

Dry – Not sampled during this event due to insufficient flow and/or rainfall at site
NQE – Non-Qualifying Event with less than 0.15 inches of rain

9.7.9 Individual Permittee Efforts on Pollutants Observed at Elevated Levels

Individually, the Permittees have taken, or are committing to take specific actions such as studies to purchasing new equipment to address pollutants found in their outfalls that may be causing or contributing to an exceedance of a water quality standard, or is only seen at an elevated level in their outfall, but not in the receiving water. These are detailed below.

Camarillo

Camarillo is an active participant in the Countywide Stormwater program and supports the actions that were discussed in the section above.

In addition to the countywide discussion in the monitoring section of the 2012-2013 annual report, please also refer to the "Public Outreach, Public Agency Activities, Construction, Planning and Land Development, Illicit Discharge, and Business Program" sections of the annual report for a list of actions Camarillo has taken and will continue to implement in the current year and future years to address elevated levels of bacteria, aluminum and other constituents that were found in our urban outfall monitoring station. The following are a few highlights of actions taken by Camarillo:

Camarillo educates its residents on pollution prevention controls via our local Cityscene Newsletter that is mailed to over 18,000 residents. Articles that assist with addressing the problems with bacteria, aluminum, chloride, copper and other constituents include information on how to control pet waste and construction debris such as sediment, proper use and application of pesticides and disposal of yard waste, proper disposal of swimming pool discharges, trash management, and proper maintenance of vehicles (please refer to the PIPP section of this report for a list of these articles). In addition to the Cityscene article to residents on swimming pool discharges, Camarillo conducted a mass mailout to pool service companies alerting them to the prohibition of salt water pool discharges and proper maintenance of swimming pools. Camarillo also mails and will continue to mail this same pool maintenance information to all pool construction permit applicants.

Camarillo was an active participant in the CASQA Brake Pad Partnership Subcommittee which was successful in getting legislation passed (SB-346) to reduce the level of copper in brake pads. The first visible steps to implement SB-346 are underway with the certification of brake pads for compliance with the toxic metals, asbestos, and copper standards being undertaken to meet the January 1, 2014 certification deadline.

Further, since several constituents may be attached to sediment, Camarillo recently increased the inspection of construction sites to quarterly for private developments and monthly for city capital improvement program projects which should help to ensure sediment and erosion controls are being properly applied. Further, Camarillo has one QSD and one QSP on staff with the underlying certifications of CIESC to assist with insuring proper controls are being applied at construction sites. In addition, the stormwater program manager has obtained the CMS4S certification.

Further, with assistance from District staff, additional dry weather monitoring of bacteria was conducted in October 2012; however, there were no standout contributors to the higher levels of bacteria found at the urban outfall station. Although Camarillo completed the required illicit screening of outfalls in 2012, to address the higher levels of pH detected in the countywide dry weather monitoring in 2012 and 2013, we hired a contractor to conducted further dry weather screening of the channel upstream of our urban outfall monitoring station in May 2013 and August 2013. Further the city purchased a Hach pH/turbidity field meter and conducted additional screening of this area for pH in October 2013. The results of the screening did not locate any illegal discharges, only trickles of irrigation water. The pH levels taken in what little dry weather runoff was found were between 7.59 and 8.94. Camarillo will continue to screen this channel during dry weather runoff in the current Permit year.

In addition to the above actions, Camarillo is an active participant in the Calleguas Creek Watershed Management Program (CCWMP). Please refer to the February 26, 2013 Calleguas Creek Watershed TMDL Monitoring Program Annual Report for the period of August 2011 to July 2012, which was sent to the Los Angeles Regional Water Quality Control Board staff. This report provides details on compliance with the TMDLs in which Camarillo is listed as a responsible party. As per the February 2013 report, for the most part the Calleguas Creek Watershed is in compliance with the applicable interim or final WLAs and LAs currently in effect for the OC Pesticides, Toxicity, and Metals TMDLs addressed in the related QAPP. In conjunction with the CCWMP, Camarillo will be submitting to the Regional Board the TMDL annual report for the period of August 2012 to July 2013 by the February 2014 deadline. Also, please refer to the 2011-2012 Annual Report for the Revolon Slough and Beardsley Wash Trash TMDL, which was submitted to the Los Angeles Regional Board on January 28, 2013. This report provides monitoring results and Camarillo's compliance strategies being implemented and proposed for future years, which includes the installation of full capture trash devices in all applicable catch basin inlets within the Revolon Slough/Beardsley Wash subwatershed by March 2016. The 2012-2013 Trash TMDL Annual Report will be submitted in January 2014.

County of Ventura

In response to elevated concentrations of bacteria at the County's stormwater monitoring stations, the County initiated a site evaluation for retrofit opportunities in the County Unincorporated Urban areas within the upper Ventura River watershed. Concept retrofit projects were developed for the Meiners Oaks and Miramonte

communities. In October 2013, the County prepared and submitted concept proposal for Urban LID Retrofit project at Meiners Oaks. The proposed project was designed to reduce pollutant load and discharges from the County MS4 by construction of permeable concrete gutters atop infiltration trenches and dry wells at two locations, a bioretention system along the County right-of-way, and a bioretention swale at an existing community park. The intent of these infiltration systems is to cost-effectively treat urban stormwater pollutants including bacteria to reduce discharge volumes and peak flow rates. The project will include system effectiveness monitoring, education and outreach at the popular community park, and hands-on Ocean Friendly Garden™ (OFG) community workshop at a private property converting a conventional front lawn into a rain garden. As part of this project, the County intends to cooperate with Ojai Valley Land Conservancy and Surfrider Foundation with support of the Ventura River Watershed Council (VRWC).

Starting in fall of 2013, County will participate in a two-year Countywide Bacteria Special Study with a focus on upper Ventura River for the County Unincorporated areas. Dry-weather urban runoff samples will be collected at Casitas Springs, Oak View, and Meiners Oaks, which will represent discharges from the County urban areas above receiving water monitoring (mass emission) station in Ventura River. In addition, County is planning on a dry-weather bacteria source identification study within Meiners Oaks in spring/summer of 2014 to include source identification field screening and DNA testing of runoff discharges. The study is designed to provide information about the sources of bacteria originating in the County's drainage area and for detailed planning and prioritizing BMP implementation.

In 2013, County supplied brochures "Watershed Protection Tips for Horse Owners" to the VRWC Coordinator for dissemination to equestrian facilities located within the watershed. The County sustained services of Ventura County Resource Conservation District (VC RCD) to provide outreach and education to the Ventura County horse and cattle owners. VC RCD has been very active and supportive of horse and cattle owners in Ventura River watershed during development of the Algae TMDL (approved in June 2013). Under County's contract, VC RCD worked with a number of horse owners to provide planning and design support for on-site structural stormwater treatment and horse manure management BMPs. In 2013/2014, the effort has been expanded to other Ventura County's watersheds.

In July 2012, the District signed an agreement with SCCWRP for the Kiddie and Hobie Beaches Quantitative Microbial Risk Assessment (QMRA) Study and entered into a Cost Sharing Agreement with the County of Ventura Public Works Agency to share up to $300,000 towards the Study. Under these agreements, SCCWRP initiated a source tracking study to confirm the lack of human sources and identify the non-human sources contributing to the beach contamination. The presence of human fecal pollution halted the QMRA because where human fecal pollution is present, existing water quality objectives are considered appropriate for the protection of human health. The Channel Islands Harbor Community Services district is planning to upgrade the sewer infrastructure in 2014, after which County will perform verification monitoring, and additional source identification studies to determine County sources of bacteria, as needed.

In June 2013, the County in cooperation with SCCWRP submitted a concept proposal for dry-weather verification sampling and wet-weather special study at the Ventura Coastal Beaches under the Clean Beaches Initiative Grant Program. The dry-weather verification sampling part of the project was invited for re-submission early in 2014. The wet-weather special identification study was not of interest for this type of grant funding.

In accordance with Wet-Weather Bacteria TMDL Implementation Plan for Ventura Coastal Kiddie and Hobie Beaches (dated June 2010), the County began implementation of Institutional BMPs identified in the work plan's implementation schedule. The proposed Downspout Disconnect Program was originally envisioned as a rain barrel and cistern installation incentive program. However, during planning and program development, it was determined that many of the beach homes within the TMDL drainage area do not have gutters and many homes are built with minimal side yards, severely limiting the practical use of rain barrels in a neighborhood with few gutters or downspouts to direct into them. In partnership with the Surfrider Foundation, the County hosted an Ocean Friendly Garden™ (OFG) community workshop on June 15, 2013. The OFG workshop and residential outreach flier "Green Your Concrete Footprint" provided residential homeowners ideas to promote increased

integration of permeable surfaces, use of native plants, and water efficient irrigation practices in order to reduce urban runoff pollution in the Channel Islands Harbor community. Encouraged by the success of cooperation with Surfrider Foundation, the County arranged for another workshop in Oak Park, on October 26, 2013. The County cooperated with Triunfo Sanitation District and City of Thousand Oaks to ensure effective outreach and distribution of the workshop announcements and educational brochures.

In May 2013, the County and the District submitted an Addendum to the Implementation Plan for Malibu Creek Bacteria TMDL including a work plan for dry-weather source identification study. In June 2013, the County and the City of Thousand Oaks partnered for a dry weather microbial source Identification study in upper Malibu Creek using a tiered approach to utilizing source-specific DNA markers and chemical sewage markers. The comprehensive indicator bacteria sampling and flow measurements were used to identify sites for structural BMPs. The final results of this study are pending source-specific marker laboratory data. Field screening and preliminary sample analysis data were used to guide the planning and design of structural BMPs in the most urbanized County Unincorporated area - Oak Park, CA. This proposal was supported by Heal the Bay and Surfrider Foundation.

In October 2013, the County submitted a concept proposal for Oak Park Green Streets Urban Retrofit project under the Proposition 84 Stormwater Implementation Grant Program. The County's concept proposal for Brookside School Greenscape Retrofit submitted in March 2013 under the Urban Greening for Sustainable Communities Grant Program, was invited for full application. Project design and full application were also submitted to California Natural Resources Agency in October 2013.

In April 2013, County of Ventura signed a Grant Agreement for County Government Center Parking Lot Green Streets Urban Retrofit Project under the Proposition 84 Stormwater Implementation Grant Program. The objective of this project is to reduce runoff discharge and pollutant loads from approximately 39 acres of impervious surface area of County Government Center parking lot. The construction is scheduled in summer of 2014 followed by educational outreach. Effectiveness of the parking lot retrofit project will be evaluated using water quality and flow monitoring data.

Moorpark

Bacteria: The City recognizes that bacteria appears to be a common problem in many watersheds throughout the country, not only in Ventura County. It remains to be determined how effective any particular BMP is in attaining reduced bacteria levels in stormwater flow.

Aluminum: Moorpark supports a Special Study to determine if aluminum is a naturally occurring metal in the soils of Ventura County.

Arsenic detection: may need further research as it might be naturally occurring.

The City believes that the reduction of detects for pesticides in stormwater is from the public's recognition of the negative impacts of pesticides on lawns and the importance of water conservation by reducing water run-off.

Oxnard

As indicated by the 2012/2013 storm water monitoring results, elevated levels of E.coli and fecal coliform were detected at the MO-OXN during multiple wet weather sampling events. The MO-OXN is located in the El Rio Drain which receives stormwater and nonstormwater runoff from the El Rio, East Vineyard, and North Ventura subwatersheds. The El Rio drain (a tributary to the Santa Clara River) is located near the corner of Buckaroo Avenue and Winchester Drive.

In an effort to prevent or reduce elevated levels of E. coli and fecal coliform, the City of Oxnard Technical Services Program –Source Control (TSP-SC) division implements a stormwater program with established Best

Management Practices (BMPs). During the 2012/2013 Permit year, TSP-SC staff conducted a comprehensive investigation of the El Rio, East Vineyard, and North Ventura subwatersheds by reviewing land use data, business inventories, and critical source inspection records. TSP-SC staff inspected businesses with a focus on outdoor trash enclosures, outdoor storage of waste and materials, and grease interceptor/clarifier maintenance. BMP information was provided regarding surface cleaning, waste management, and grease interceptor/clarifier maintenance. In addition, TSP-SC staff met with Wastewater Collections staff to review sanitary sewer overflow and grease interceptor overflow response protocol and training was provided for illicit discharge response.

TSP-SC staff reviewed the municipal storm drain atlas to locate all infrastructures that discharges into the El Rio Drain. Staff conducted field screening activities and walked the channels to identify possible sources of bacteria and illicit connections. In one instance, TSP-SC staff identified a homeowner who was throwing dog feces over they're backyard wall onto the access road along the El Rio drain. The resident was issued a notice of violation with a directive to clean and abate the illicit discharge activities. TSP-SC staff have since followed up and verified compliance. We have found that storm drain field screening is a simple yet effective BMP and we will continue this practice on an ongoing basis.

TSP-SC staff went into communities and identified possible bacteria sources such as homeless encampments, excessive dog feces, and farm animals (goats, chickens, etc.). TSP-SC staff worked with other City departments to disseminate information on homeless shelters, RV dumping stations, and pet owner brochures. Additional dog poop bags and dispensers were provided for affected neighborhoods. Training was provided to City Code Compliance officers with a focus on illicit discharge response and BMP information forms were put in a share drive so that all City departments could access and download the forms as needed. In addition, the Oxnard Commission on Homelessness meets monthly to collaborate with residents, businesses, and charity organizations to find solutions for the homeless and address the problems created by homeless encampments.

The City of Oxnard is also a participating agency in a subcommittee to address the requirements of the Santa Clara River TMDL which became effective March 21, 2012. The City of Oxnard in partnership with the Cities of Fillmore, Santa Paula, Ventura, and the County of Ventura, have prepared an In-Stream Compliance Monitoring Plan for the Estuary and Reach 3 of the Santa Clara River. The Plan has been submitted to the Los Angeles Regional Water Quality Control Board and we are currently awaiting approval to implement the Monitoring Plan. Most recently, the subcommittee met to discuss the preparation of an implementation plan to address the SCR TMDL. Subcommittee staff have begun preparation of a request for proposal to hire a consultant to prepare the plan.

Over the past few months, TSP-SC staff have begun to modify the storm water training program for the various city departments. While we have traditionally focused our training on MS4 Permit compliance and BMP implementation, we have begun to introduce the concepts low impact development and green infrastructure to all levels of employees with an understanding that this is the new direction for storm water quality compliance. The City of Oxnard has historically been proactive in implementing LID projects such as permeable grass parking lots and water efficient landscaping. Capital Improvement Project managers and engineers are strongly encouraged to implement LID concepts whenever possible.

In addition to training city staff, TSP-SC staff attend Inter-Neighborhood Council Forums to conduct storm water compliance presentations and discuss issues with Oxnard residents. Residents are allowed to ask questions or present concerns regarding storm water to applicable city personnel. This also serves as a forum to disseminate storm water BMP handouts, posters, and bookmarks.

In hopes of making future program improvements, the City of Oxnard voted to allocate a portion of the Ventura Countywide Stormwater Quality Program's 2013 budget to fund a special bacteria source tracking study. The study will be conducted by the Southern California Coastal Water Research Project as part of the 2013 Southern California Bight Regional Monitoring Program. In addition, the Program will be taking additional samples at all major outfalls to analyze for the human marker (HF183), for 3 storm events. HF183 marker results will indicate

frequency of human contamination at sample locations. It is the intent that these sample results will provide us with primary sources of pathogen indicators to help us to better implement target specific BMPs.

As we look forward to the coming 2013-2014 year, we plan to better utilize the capabilities of our Graphic Information Systems (GIS) Department. Currently, we use smart phone technology to comply with our Trash TMDL monitoring requirements. TSP-SC staff have been attending bi-monthly meetings with GIS staff to explore options regarding the use of Freeance Data Collection software to more effectively track illicit discharges/illicit connections and build a user friendly database. Our goal is to build a user friendly system that allows us to remotely access historical data or input current data for specific locations using smart phone or tablet technology.

TSP-SC staff are constantly evaluating what programs and BMPs are most effective. We have enlisted the help of all city departments with the common goal of meeting our water quality standards and maintaining the beneficial uses for our receiving waters. The City of Oxnard has been and will continue to be proactive and diligent in its efforts to implement BMPs to prevent or reduce the discharge of E. coli and fecal coliform.

Simi Valley

Simi Valley has addressed the occurrences of high aluminum and bacteria at the MO-SIM sampling site by performing additional upstream water sampling. Staff conducted sampling events on September 5, 2013 for bacteria and aluminum and November 13, 2013 for bacteria. No samples for aluminum were taken during the November 13th sampling event due to the low results during the September 5th sampling event. The November 13th samples were collected at the same locations as the September sampling at Bus Canyon Channel and the Bus Canyon Tributary with additional samples collected upstream of both the original locations at the Bus Canyon Tributary and First Street and the Bus Canyon Channel and Royal Avenue. All samples were taken during dry weather with very low flows in both channels.

As was expected the pumped groundwater entering the channel was neither a source of aluminum nor bacteria. Total Coliform and Entrococcus were less at the November sampling date at the Bus Canyon Channel than during the September sampling, however Fecal Coliform was higher. The November samples were also lower for Total Coliform and Entrococcus at the Bus Canyon Tributary and Fecal Coliform was once again higher. The samples collected upstream of the Bus Canyon sampling location were lower for Total Coliform and Entrococcus and the same for Fecal Coliform. This channel runs through a residential area with a middle school on one side of the channel. The upstream samples taken for the Bus Canyon Tributary were higher for Total Coliform and Entrococcus and lower for Fecal Coliform. The higher results may be due to the very low flow and nearly stagnant conditions at the upstream sampling location. The Bus Canyon Tributary is in a residential area.

The high bacteria samples may be due to native animal sources, residents disposing of pet waste along the channel, or possibly human activity in the channels. Staff will continue to monitor the bacteria levels and provide more intensive public outreach regarding proper pet waste disposal and general watershed guidelines.

Thousand Oaks

Pathogen Indicators – In acknowledging the single exceedence at the mass-emissions monitoring station, there is no reason to conclude the City's MS4 'caused or contributed' to an exceedence for the Water Quality Objective for fecal or e-coli bacteria as discussed in the following paragraphs.

Receiving waters in the area are a riparian habitat, and provide such habitat and transit corridor for many native animals and mammals (raccoon, deer, coyote, etc.). Additionally, many reaches of the creek are under a very full canopy of trees which are prime avian habitat and a likely source of direct fecal deposition from these birds into the receiving waters. Pools and ponds along this reach are also habitat to ducks, geese and other water fowl, an additional natural source of fecal deposition. Wet weather will only increase the delivery of and flushing of riparian native ground areas and tree-deposited fecal deposition into the receiving waters.

The City owned and operated Hill Canyon WWTP is just downstream of this monitoring location on the North fork of Conejo Creek. The laboratory staff is required to perform receiving water monitoring in the creek at a location, an estimated 350 feet downstream of the subject mass-emission station. Average daily flow in this fork of the creek upstream of the plant is approximately 0.5 MGD. Downstream of the plant the flow increases to approximately 9.5 MGD. Bacteria monitoring is performed in the receiving water on a weekly basis. In-stream results in the North-fork are consistently below 20 MPN for e-coli. In the last four years the Water Quality Objective of 235 MPN has not been exceeded.

As there is an affinity for bacteria to adhere to solids the following steps have been taken. The development conditions affecting new development and redevelopment have been in place for many years requiring Zero-runoff for up to a Q2 storm event and/or requiring significant on-site BMPs to reduce or eliminate nuisance flows (a hydraulic conduit for pathogen transport) to reduce or eliminate suspended solids from site run-off. Additionally, capital projects undertaken by the City have addressed improvements to either infiltrating street flow (e.g. parkland adjacent to Borchard and Michael takes nuisance flow from over 100 acres and infiltrates that flow into parkland) and treating discharge to storm drain (CDS unit incorporated to treat stormwater flows along City arterials).

Chlorides. The City of thousand Oaks is listed as a responsible party in the Calleguas Creek chloride TMDL. The stakeholders have drafted, submitted and have had a compliance implementation plan accepted by the Regional Board. The City is in current compliance with this implementation plan.

Specific NPDES-targeted City of Thousand Oaks Capital Improvement Projects

- Thousand Oaks Boulevard Improvements – late 2009

  Approximately 30 acres of open space and approximately ¼ acre of a six lane freeway drains to an existing reinforced concrete pipe culvert that crosses under the U.S. 101 freeway to the northerly outlet of a Caltrans culvert. The Caltrans culvert then drains to a unlined channel that is sandwiched between the back of existing buildings to the west and the toe of a natural slope to the east which ultimately discharges mud and debris onto Thousand Oaks Boulevard, one of the city's major arterial streets. The scouring of the open space and natural channel resulted in major storm water overflows and heavy silt deposits on to Thousand Oaks Boulevard.

  A twenty-four (24) inch storm water lateral system was constructed to capture the overflow before it gets to the Boulevard. The lateral system consists of a stilling-basin, a reverse catch basin with an interior screening system (Connector Pipe Screen), and a hydrodynamic clarifier (Continuous Deflective Separation, CDS Unit). This three-stage treatment train reduces siltation, total suspended solids, and hydrocarbons in storm runoff.

- Michael Drive and Newbury Road

  Approximately 101 acres of residential development and open space drains toward the northwest corner of the intersection of Michael Drive and Newbury Road, as well as west of the intersection downstream toward Borchard Road. As a result of the significant watershed and resulting runnoff, the storm waters pond and silt has historically settled upon the streets in this vicinity.

  With no feasible outlet for discharges due to capacity constraints, an intermediate solution for treating the ponding and siltation was derived by constructing a series of infiltration trenches along Michael Drive and an infiltration basin at the Newbury Gateway Park, a Conejo Recreation & Parks District property.

  The parkways along Michael Drive were converted to a landscaped infiltration trench by expanding it five (5) feet on each side with a slotted curb. The infiltration trenches drain low-flows to a filtered inlet that leads to the landscaped infiltration basin. The bottom of the infiltration basin has a wrapped rock layer

that allows for water to percolate. The outlet of the infiltration basin is a twelve (12) inch lateral that connects the basin's overflows to the existing storm drain system.

9.7.10 Mass Emission Calculations

Mass loadings were estimated for constituents detected at the ME-CC and ME-VR2 Mass Emission stations during the 2012/13 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 2012/13 at the ME-CC and ME-VR2 stations lasted from just over 10 hours (Event 4 at ME-VR2) to just under 24 hours (Event 2 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 9-36). These mass loading estimates are presented in

Table 9-37 and Table 9-38.

Table 9-36. Example Mass Loading Calculation

Event 2 at ME-CC
Chloride concentration: 140 mg/L Event duration: 20 hours, 1 minute = 20.02 hours
Average flow rate: 69.37 cfs 69.37 x 7.48 gal/cf x 3.785 L/gal = 1963.99 L/sec
Load = concentration x volume 1963.99 L/sec x 140 mg/L = 274958.6 mg/sec 274958.6 mg/sec x 60 sec/min x 60 min/hr x 20.02 hr/event x 1 kg/10^b mg x 2.2 lb/kg = **43,597 lb/event**

Table 9-37. Estimated Mass Loadings at ME-CC

Classification	Constituent	Event 2 (Wet) 11/17/2012 20.02 hrs. (lbs/event)	Event 3 (Wet) 2/19/2013 11.63 hrs. (lbs/event)	Event 4 (Wet) 3/8/2013 13.25 hrs. (lbs/event)	Event 5 (Dry) 5/23/2013 23.28 hrs. (lbs/event)
Anion	Chloride	43600	25700	37500	7230
Anion	Fluoride	112	86.6	147	13
Cation	Calcium	19900	10700	22800	2740
Cation	Magnesium	13300	6530	12100	1560
Conventional	BOD	2120	1360	5990	43.4*
Conventional	COD	13700	5770	15800	318
Conventional	MBAS	9.3*	3.5*	ND	1.6
Conventional	Phenolics	11.5	10.3	65.3	0.27*
Conventional	Total Chlorine Residual	8.1*	9	ND	0.95*
Conventional	Total Dissolved Solids	224000	117000	239000	31800

Classification	Constituent	Event 2 (Wet) 11/17/2012 20.02 hrs. (lbs/event)	Event 3 (Wet) 2/19/2013 11.63 hrs. (lbs/event)	Event 4 (Wet) 3/8/2013 13.25 hrs. (lbs/event)	Event 5 (Dry) 5/23/2013 23.28 hrs. (lbs/event)
Conventional	Total Organic Carbon	2930	1170	3480	127
Conventional	Total Suspended Solids	27400	14400	522000	231
Conventional	Volatile Suspended Solids	4050	ND	87000	ND
Hydrocarbon	Oil and Grease	ND	ND	979*	ND
Metal	Aluminum (Total)	685	176	1310	3.8
Metal	Antimony (Total)	0.21	0.07*	0.27	0.01*
Metal	Arsenic (Total)	1.4	0.53	2	0.1
Metal	Barium (Total)	14.9	5.8	22.9	0.95
Metal	Beryllium (Total)	0.03	ND	0.05*	ND
Metal	Cadmium (Total)	0.14	0.04	0.22	0.01
Metal	Chromium (Total)	2	0.55	3.3	0.02
Metal	Chromium VI	0.09*	0.03*	0.14*	0.01*
Metal	Copper (Total)	3.4	1.2	4.7	0.1
Metal	Iron (Total)	1120	241	2070	4.9
Metal	Lead (Total)	0.87	0.26	1.5	0.004*
Metal	Mercury (Total)	0.01*	0.004*	0.04	ND
Metal	Nickel (Total)	2.9	0.93	3.8	0.19
Metal	Selenium (Total)	0.47	0.22	0.4	0.02
Metal	Silver (Total)	0.02*	0.005*	ND	0.001*
Metal	Thallium (Total)	0.02*	ND	ND	ND
Metal	Zinc (Total)	11.8	4.3	14.7	0.55
Nutrient	Ammonia as N	99.6	38.5	87	2.7*
Nutrient	Nitrate + Nitrite as N	1710	754	2010	249
Nutrient	Nitrate as N	1650	738	1960	246
Nutrient	Phosphorus as P (Total)	778	273	598	92.6
Nutrient	TKN	747	225	539	17.6
Organic	2,4,6-Trichlorophenol	ND	0.05*	0.2*	ND
Organic	Benzo(a)pyrene	0.05	ND	ND	ND
Organic	Diethyl phthalate	0.34	0.07*	0.3*	0.01*
Pesticide	4,4'-DDE	ND	0.004*	0.02*	ND
Pesticide	Chlorpyrifos	0.07	ND	0.02	ND
Pesticide	DCPA (Dacthal)	0.26	0.19	0.6	0.07
Pesticide	Glyphosate	2.8	2.2	8.7	ND
Pesticide	Malathion	0.01	ND	ND	ND
Pesticide	Prometryn	ND	ND	0.13	0.02

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 9-38. Estimated Mass Loadings at ME-VR2

Classification	Constituent	Event 2 (Wet) 11/17/2012 23.73 hrs. (lbs/event)	Event 3 (Wet) 2/19/2013 N/A hrs. (lbs/event)	Event 4 (Wet) 3/8/2013 10.30 hrs. (lbs/event)	Event 5 (Dry) 4/30/2013 23.22 hrs. (lbs/event)
Anion	Chloride	798	N/A	1270	3060
Anion	Fluoride	3.8	N/A	7.5	22.2
Cation	Calcium	1110	N/A	2330	5710

Classification	Constituent	Event 2 (Wet) 11/17/2012 23.73 hrs. (lbs/event)	Event 3 (Wet) 2/19/2013 N/A hrs. (lbs/event)	Event 4 (Wet) 3/8/2013 10.30 hrs. (lbs/event)	Event 5 (Dry) 4/30/2013 23.22 hrs. (lbs/event)
Cation	Magnesium	340	N/A	664	1580
Conventional	BOD	36.4	N/A	27.8*	120
Conventional	COD	139	N/A	191	ND
Conventional	Cyanide	0.02*	N/A	ND	ND
Conventional	MBAS	0.21*	N/A	ND	1.7*
Conventional	Phenolics	0.1	N/A	0.99	0.27*
Conventional	Total Dissolved Solids	7720	N/A	13700	36800
Conventional	Total Organic Carbon	41.6	N/A	50.4	88.6
Conventional	Total Suspended Solids	69.4	N/A	296	266
Conventional	Volatile Suspended Solids	ND	N/A	69.6*	ND
Hydrocarbon	Oil and Grease	ND	N/A	41.7*	97.5*
Metal	Aluminum (Total)	0.87	N/A	9.4	2.2
Metal	Antimony (Total)	0.001*	N/A	0.002*	ND
Metal	Arsenic (Total)	0.01	N/A	0.02	0.03
Metal	Barium (Total)	ND	N/A	ND	2.3
Metal	Cadmium (Total)	0.001*	N/A	0.001*	0.002*
Metal	Chromium (Total)	0.003	N/A	0.02	0.01*
Metal	Chromium VI	0.001*	N/A	0.002*	0.003*
Metal	Copper (Total)	0.03	N/A	0.06	0.03
Metal	Iron (Total)	3.6	N/A	12.9	6.2
Metal	Lead (Total)	0.002	N/A	0.01	0.003*
Metal	Mercury (Total)	ND	N/A	0.002	ND
Metal	Nickel (Total)	0.06	N/A	0.05	0.05
Metal	Selenium (Total)	0.01	N/A	0.04	0.05
Metal	Zinc (Total)	0.08	N/A	0.09	0.08*
Nutrient	Ammonia as N	0.85*	N/A	1.2*	3.6*
Nutrient	Nitrate + Nitrite as N	4	N/A	4.3	9.3
Nutrient	Phosphorus as P (Total)	1	N/A	2.1	1.7
Nutrient	TKN	3	N/A	4.7	36.8
Organic	2,4-Dinitrotoluene	ND	N/A	ND	0.02*
Organic	Benz(a)anthracene	ND	N/A	0.01	ND
Organic	Benzo(b)fluoranthene	ND	N/A	0.01	ND
Organic	Benzo(k)fluoranthene	ND	N/A	0.003	ND
Organic	Butyl benzyl phthalate	ND	N/A	0.01*	0.03*
Organic	Chrysene	ND	N/A	0.01	ND
Organic	Diethyl phthalate	0.003*	N/A	0.01*	0.02*
Organic	Dimethyl phthalate	ND	N/A	ND	0.02*
Organic	Di-n-butylphthalate	ND	N/A	0.01*	0.02*
Organic	Fluoranthene	ND	N/A	0.01	ND
Organic	N-Nitrosodiphenylamine	ND	N/A	ND	0.01*
Organic	Pyrene	ND	N/A	0.01	ND
Pesticide	Glyphosate	0.23	N/A	0.15	ND

ND – Constituent not detected, and, therefore, no estimated mass loading was calculated.
N/A – Event 3 was not sampled at ME-VR2 due to insufficient rainfall.
* - Calculation of mass loading derived from result flagged as DNQ - constituent detected but not quantified (MDL < result < RL).

9.8 MASS EMISSION STATIONS CONCENTRATION TRENDS 2001 - 2012

9.8.1 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)[23], 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 Helsel and Hirsh (2002)[19] and Helsel (2012)[24], 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 9-39. 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

[23] 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.

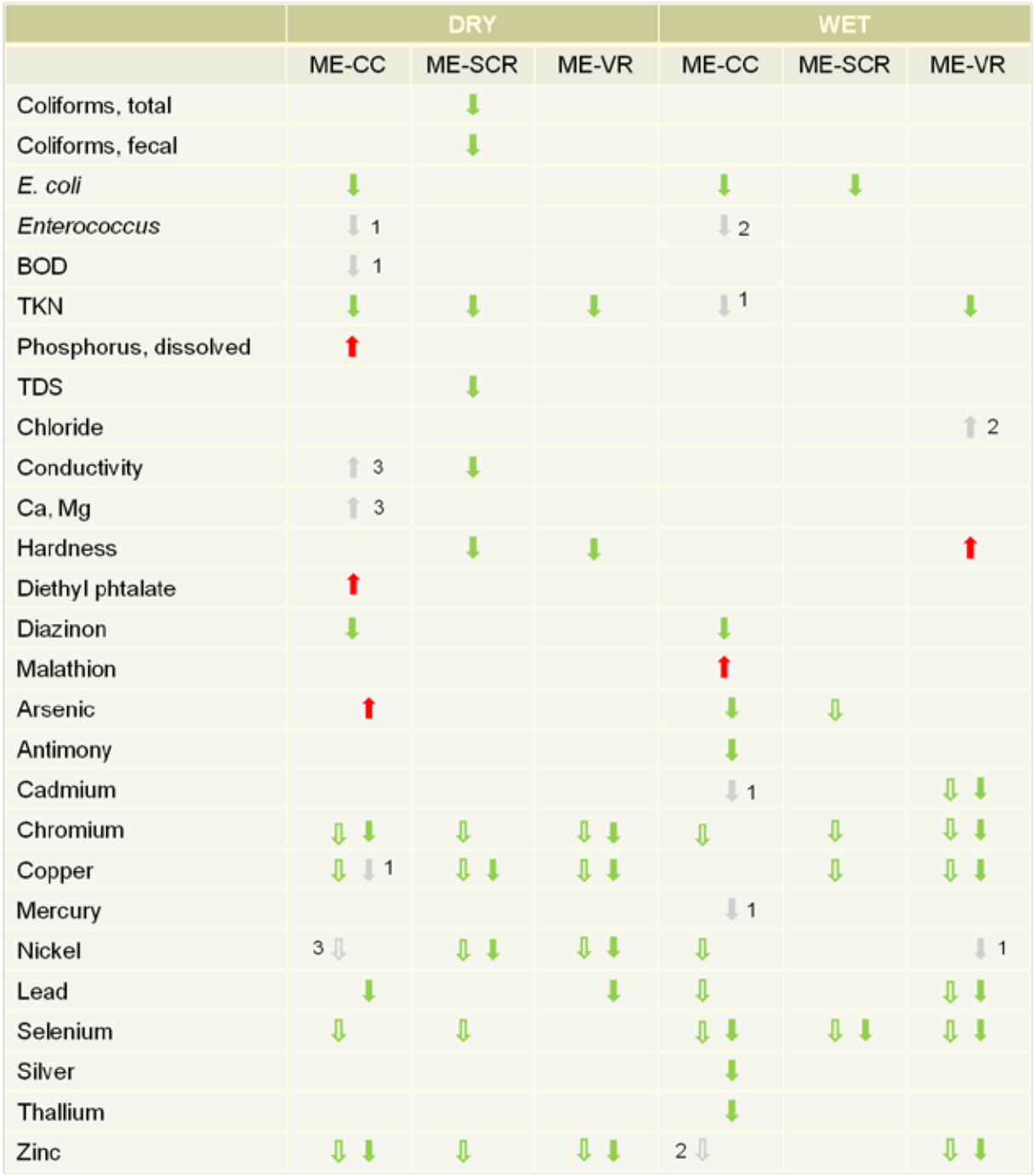
[24] Helsel, D.R., 2012, Statistics for censored environmental data using Minitab® and R, 2nd ed., John Wiley & Sons, Inc., Hoboken, NJ, 324 p.

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.

9.8.2 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.

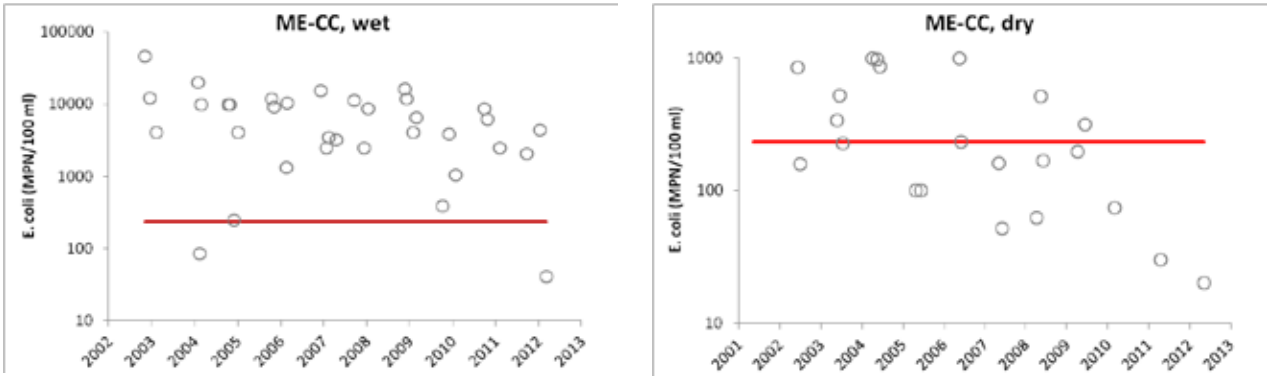
Figure 9-9. Summary of significantly increasing and decreasing trends at Mass Emission Stations. Decreasing trends are indicated by downward green arrows, increasing trends by upward red arrows. For metals, total fractions are indicated by colored arrows, dissolved fractions by open arrows. Grey arrows 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.

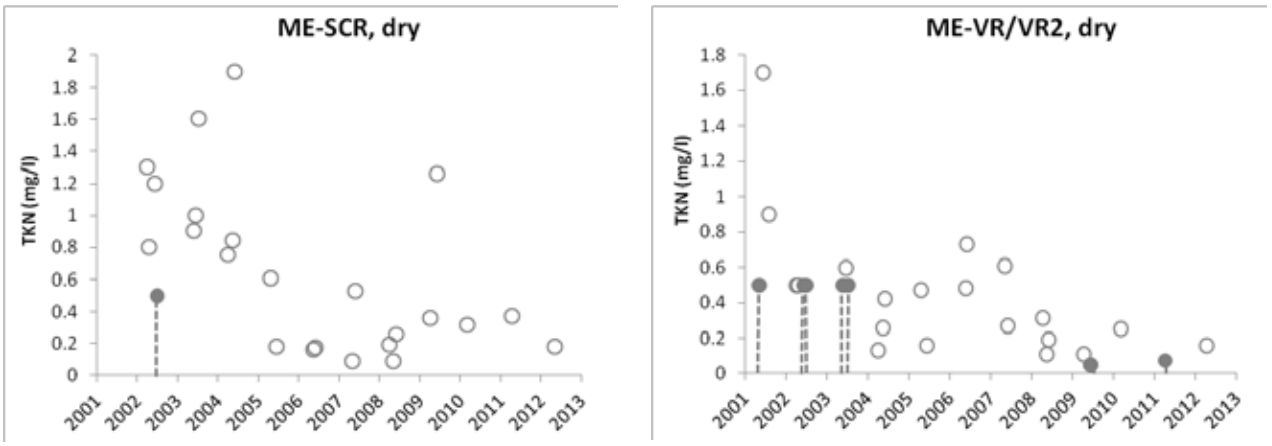


Nutrients

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.

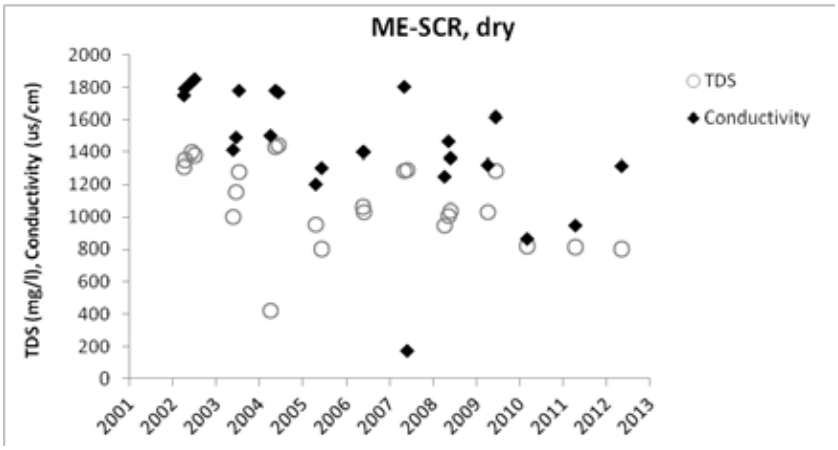
Figure 9-11. Total Kjeldahl Nitrogen (TKN) concentrations at ME-SCR and ME-VR/VR2. Concentrations below the detection limit are indicated by full grey symbols at detection limit value, connected by dotted line to zero.



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.

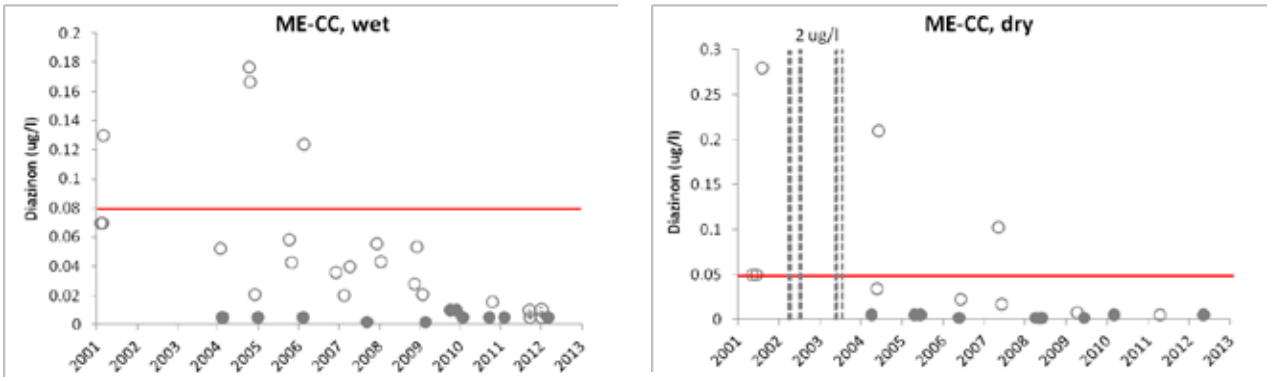
Figure 9-12. Dry weather concentrations of total dissolved solids (TDS) and conductivity at ME-SCR.



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.

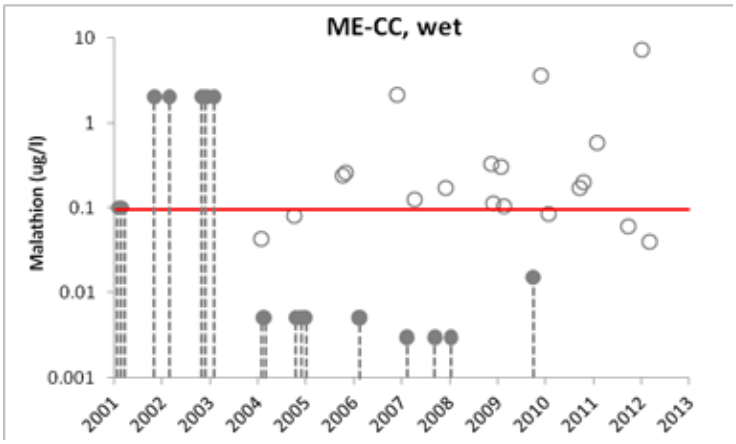
Figure 9-13. Diazinon trends at ME-CC. California Department of Fish and Game recommended criteria are shown by a red line (continuous concentrations for dry weather and maximum concentrations for wet weather). Concentrations below the detection limit are indicated by full grey symbols at detection limit 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

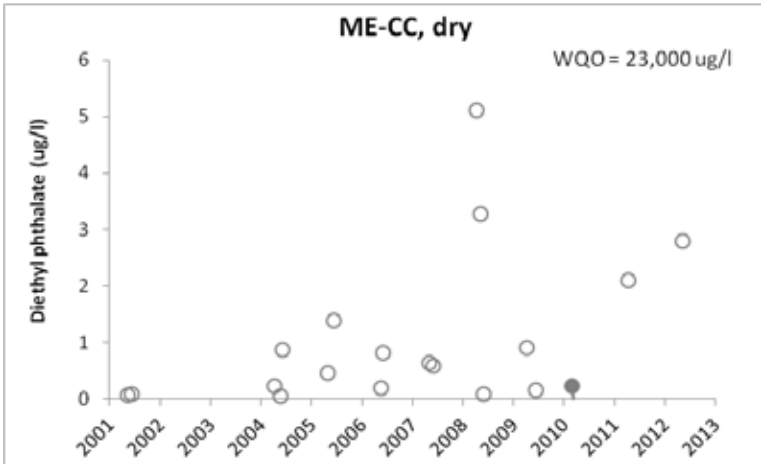
at ME-SCR and ME-VR/VR2. However, current concentrations at ME-CC are 10- to 100-fold lower than concentrations observed in surface waters during the 1994-1995 Mediterranean Fruit Fly Eradication Program.[25]

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.



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.



[25] Newhart, K., 2006. Environmental fate of malathion. California Environmental Protection Agency, Department of Pesticide Regulation.

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.

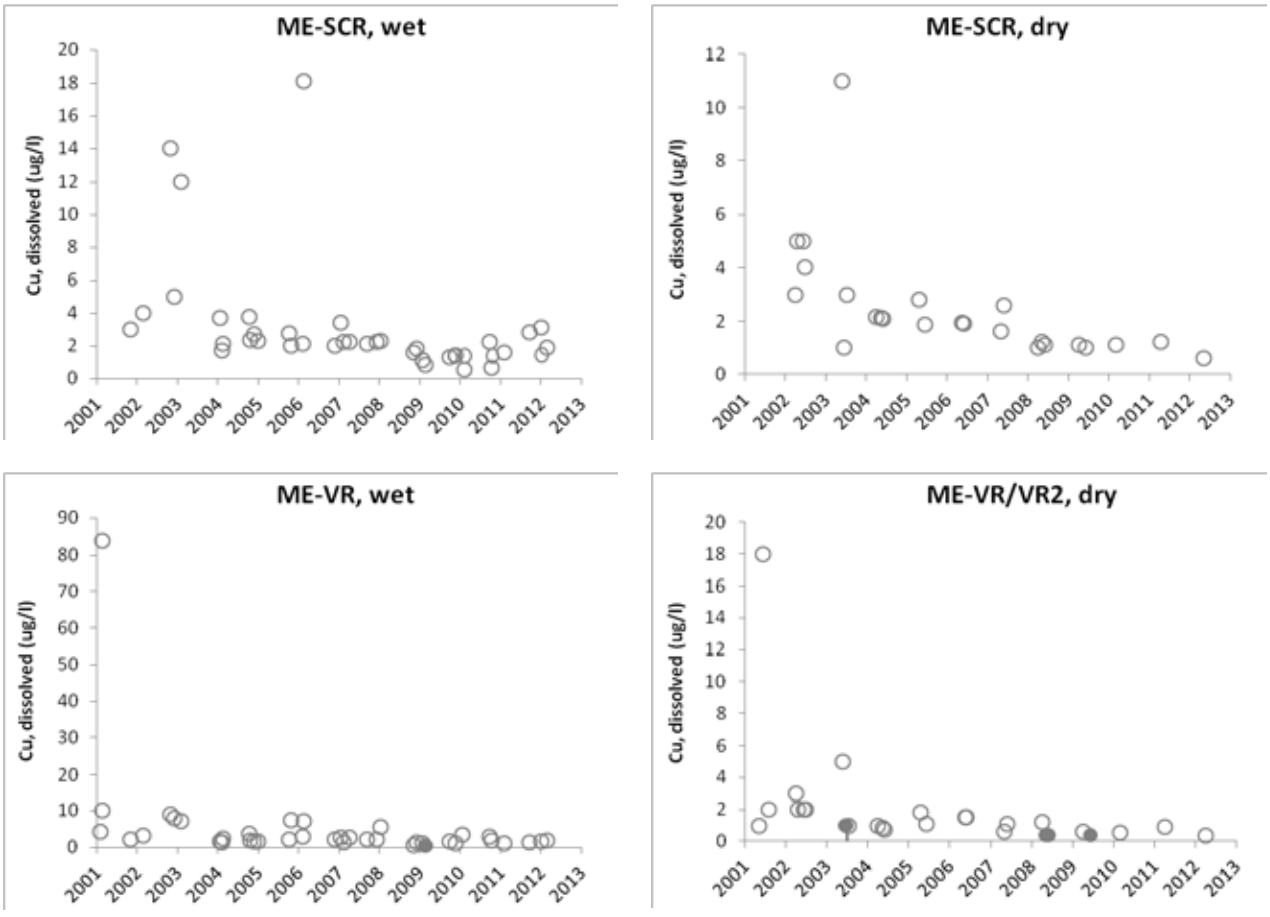
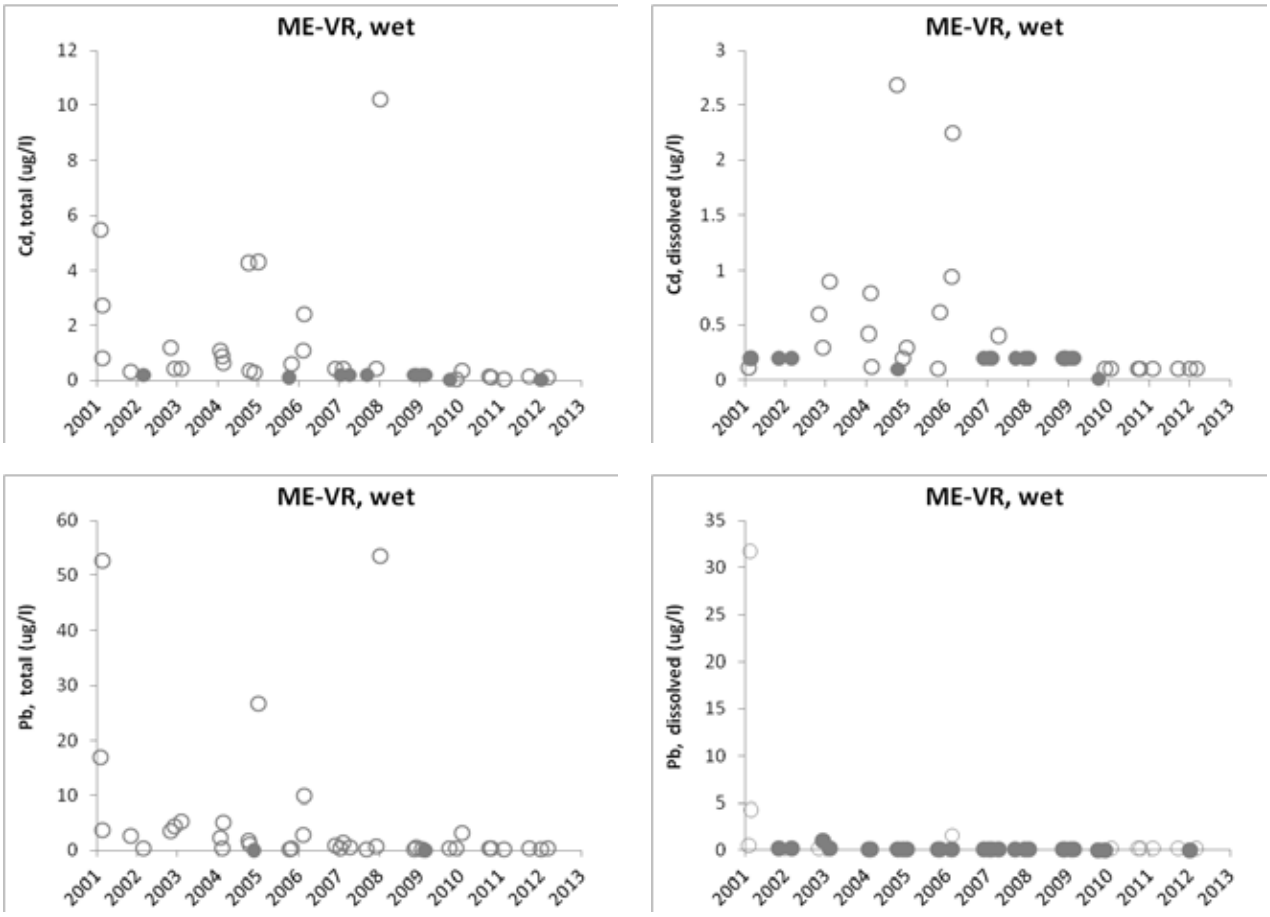


Figure 9-17. Wet weather total and dissolved lead and cadmium concentrations at ME-VR/VR2. Concentrations below the detection limit are indicated by full grey symbols at detection limit value.

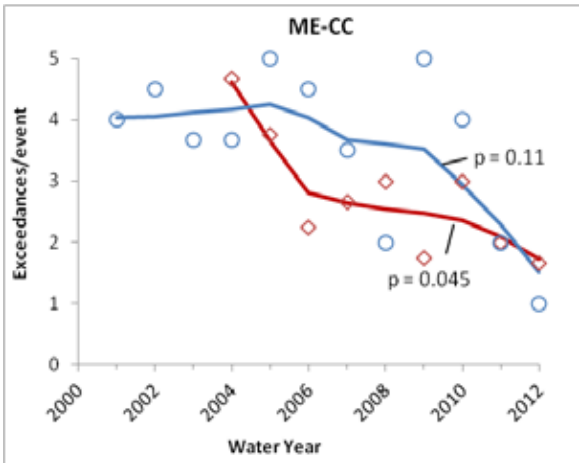


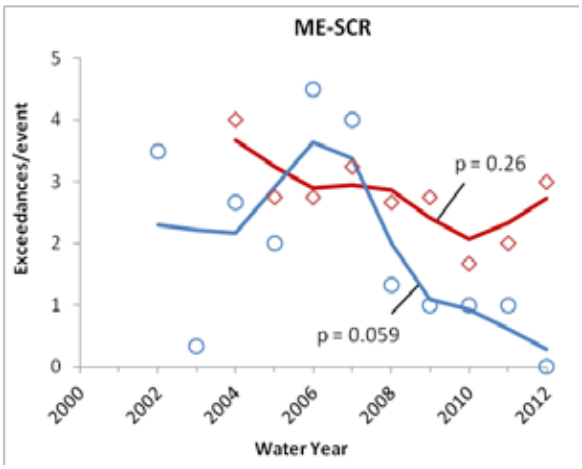
Trends in Water Quality Exceedances

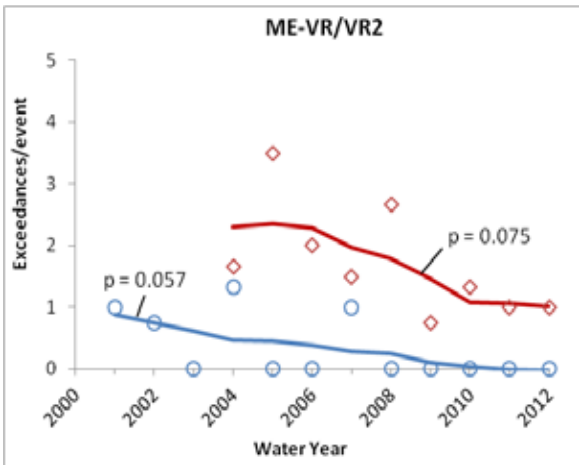
The number of wet weather exceedances has decreased since 2004 at ME-CC and ME-VR/VR2, although the significance is rather low at the latter ($p = 0.075$) (Figure 9-18). A closer inspection of the data revealed that the above average number of exceedances in years 2004 and 2005 were mostly caused by 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.

9.8.3 Water Quality Index

Description

The County of Ventura River Water Quality Index mathematically combines a number of variables, based on a large set of monitoring data, in one easily understood value. It was developed specifically for the County of Ventura to summarize chemical, microbiological and toxicity monitoring data, and is based on the Alberta River Water Quality Index (http://environment.alberta.ca/01275.html). The Index provides a simple snapshot of annual water quality conditions in the main rivers of the County.

Methodology

The County of Ventura River Water Quality Index is calculated annually for each watershed, for dry and wet weather separately, based on the average of six sub-indices calculated for six variable groups:

- Salts
- Bacteria
- Nutrients
- Organics (includes pesticides)
- Metals
- Toxicity

The constituents included in the index were selected based on their relevance to river water quality. They include almost all constituents that have exceeded water quality objectives since 2004 in the County of Ventura receiving waters (excluding a few that correlate with other constituents) and all pesticides that were detected by the MS4 outfall monitoring program (often these do not have water quality objectives). Toxicity test results are included in the toxicity variable group.

Most chemistry and microbiology variables are currently measured once per year during dry weather and three times per year during storm events. Toxicity is currently measured for the first wet event per year (seasonal first flush).

The constituents included in the Ventura County River Water Quality Index are summarized in the table below, together with the water quality objectives or other environmentally relevant although not enforceable thresholds applicable during dry and wet weather.

Constituents	Units	Threshold dry	Threshold wet	Threshold reference
Salts				
Total Dissolved Solids	mg/l	SSO	SSO	WQO
Chloride	mg/l	SSO	SSO	WQO
Organics				
2,4,5-T	ug/l	70	n/a	US EPA IRIS Reference Dose
2,4-D	ug/l	70	70	WQO
2,4-DB	ug/l	56	n/a	US EPA IRIS Reference Dose
4,4'-DDE	ug/l	0.00059	n/a	WQO
4,4'-DDT	ug/l	0.00059	1.1	WQO
Aldrin	ug/l	0.00013	3	WQO
Azinphos methyl	ug/l	0.01	0.01	US EPA National Recommended Water Quality Criteria
Bromacil	ug/l	70	n/a	US EPA Drinking Water Health Advisory
Chlorpyrifos	ug/l	0.014	0.02	CA Department of Fish and Game Recommended criterion
Dalapon	ug/l	200	n/a	Drinking water MCL
DCPA (Dacthal)	ug/l	0.008	14300	US EPA IRIS Reference Dose
delta-BHC	ug/l	500	n/a	National Academy of Sciences Drinking Water Health Advisory
Demeton-O	ug/l	0.1	n/a	US EPA National Recommended Water Quality Criteria
Demeton-S	ug/l	0.1	n/a	US EPA National Recommended Water Quality Criteria
Diazinon	ug/l	0.05	0.08	CA Department of Fish and Game Recommended criterion
Dicamba	ug/l	210	n/a	US EPA IRIS Reference Dose
Dimethoate	ug/l	1	n/a	CA DPH Drinking Water Notification Level
Diphenamid	ug/l	200	n/a	CA DPH Drinking Water Notification Level
Glyphosate	ug/l	700	700	WQO
Malathion	ug/l	0.1	0.1	US EPA National Recommended Water Quality Criteria
Metolachlor	ug/l	44	100	US EPA Drinking Water Health Advisory
Pentachlorophenol	ug/l	1	1	WQO
Simazine	ug/l	4	4	WQO
Toxaphene	ug/l	0.00073	0.73	WQO
Benzo(a)pyrene	ug/l	0.0044	0.2	WQO
Chrysene	ug/l	0.0044	n/a	WQO
DEHP	ug/l	1.8	4	WQO
DEP	ug/l	23000	n/a	WQO

Bacteria				
E. coli	MPN/100 ml	235	235	WQO
Nutrients				
DO	mg/L	5	5	WQO
pH	pH units	6.5-8.5	6.5-8.6	WQO
Nitrate-N	mg/l	10	10	WQO
Ammonia-N	mg/l	calc	calc	WQO
MBAS	mg/l	0.5	0.5	WQO
Metals				
Aluminum, total	ug/l	1000	1000	WQO
Antimony, total	ug/l	6	6	WQO
Arsenic, total	ug/l	50	50	WQO
Barium, total	ug/l	1000	1000	WQO
Beryllium, total	ug/l	4	4	WQO
Cadmium, total	ug/l	5	5	WQO
Cadmium, dissolved	ug/l	calc	calc	WQO
Chromium, total	ug/l	50	50	WQO
Chromium, VI	ug/l	calc	calc	WQO
Copper, dissolved	ug/l	calc	calc	WQO
Lead, dissolved	ug/l	calc	calc	WQO
Mercury, total	ug/l	0.05	2	WQO
Nickel, total	ug/l	100	100	WQO
Nickel, dissolved	ug/l	calc	calc	WQO
Selenium, total	ug/l	5	50	WQO
Silver, dissolved	ug/l	calc	calc	WQO
Thallium, total	ug/l	2	2	WQO
Thallium, dissolved	ug/l	1.7	n/a	WQO
Zinc, dissolved	ug/l	calc	calc	WQO
Toxicity				
IC50	%	100	100	NPDES Permit

Notes SSO: site-specific objectives, n/a: not applicable, calc: threshold calculated based on other water quality parameters, WQO: water quality objective

The mathematical formula used to calculate the individual sub-indices is the same one as used by the province of Alberta, Canada. However due to unique aspects in climate, pollutants of concern, urbanization, monitoring programs and environmental regulations that apply to the County of Ventura, compiling of the overall Index is tailored to Ventura County.

The Index formula is based on three aspects of water quality that relate to water quality objectives:

- Scope (F1): how many constituents do not meet objectives?
- Frequency (F2): how frequently do measurements not meet objectives?
- Magnitude (F3): by how much do measurements not meet objectives?

Most constituent concentrations are compared to the applicable water quality objectives, as explained in the Ventura Countywide Stormwater Quality Management Program 2011/2012 Water Quality Monitoring Report. For some pesticides water quality objectives have not been adopted by the State Water Resources Control Board.

In those cases, the most stringent thresholds available from the SWRCB's Water Quality Goals website were used (http://waterboards.ca.gov/water_issues/programs/water_quality_goals/search.shtml). Note that the calculations for constituents without water quality objectives is slightly different, as explained below, in order to reflect the priorities of the State Water Resources Control Board.

Index values are calculated annually for the six variable groups for each watershed, and separately for dry and wet weather events. The latter is important because water quality and pollutants of concern are often different during dry and wet weather, as our Mediterranean climate hardly produces rain between May and September. The sub-indices are then averaged to produce an overall River Water Quality Index for dry and wet weather events. Multiple indices can also be averaged to obtain an index for all watersheds combined, or for dry and wet weather combined, as in the following example for 2012/13:

Site	Event	Salts	Bacteria	Nutrients	Organics	Metals	Toxicity	Overall Index
ME-CC	Dry	16	100	100	97	100	n/a	83
	Wet	70	17	100	96	94	100	79
	Year	43	59	100	96	97	100	81
ME-SCR	Dry	59	100	100	97	95	n/a	90
	Wet	100	35	100	100	51	100	81
	Year	80	68	100	98	73	100	86
ME-VR	Dry	100	100	100	100	100	n/a	100
	Wet	100	17	100	100	100	100	86
	Year	100	59	100	100	100	100	93
All	Dry	58	100	100	98	98	n/a	91
	Wet	90	23	100	99	82	100	82
	Year	74	62	100	98	90	100	87

Rating System

Index results are reported as a number between 0 and 100, where 100 represents the best water quality, relative to objectives. The numbers are further ranked into five grades, each with a color code for graphing and mapping purposes:

Index score	Grade	Interpretation
96 – 100	A	Excellent – Guidelines almost always met
81 – 95	B	Very Good
66 – 80	C	Fair
46 – 65	D	Marginal
0 – 45	F	Poor – All constituents exceed guidelines with high frequency

Using the same example as above, the grades for 2012/13 are:

Site	Event	Salts	Bacteria	Nutrients	Organics	Metals	Toxicity	Overall Index
ME-CC	Dry	F	A	A	A	A	n/a	B
	Wet	C	F	A	A	B	A	C
	Year	F	D	A	A	A	A	B
ME-SCR	Dry	D	A	A	A	B	n/a	B
	Wet	A	F	A	A	D	A	B
	Year	C	C	A	A	C	A	B
ME-VR	Dry	A	A	A	A	A	n/a	A
	Wet	A	F	A	A	A	A	B
	Year	A	D	A	A	A	A	B
All	Dry	D	A	A	A	A	n/a	B
	Wet	B	F	A	A	B	A	B
	Year	C	D	A	A	B	A	B

What does the Index show?

Water quality has improved in Ventura County since 2003/04 (Figure 9-19). The current water quality in the County of Ventura is generally good, with A and B grades at most locations. Index scores generally increase from ME-CC to ME-SCR to ME-VR, likely related to the degree of urbanization and agriculture in each watershed (Figure 9-20). Water quality is usually better during dry weather events compared to storm events (Figure 9-19). Currently, salts are mostly responsible for water quality impairments during dry weather, and bacteria and metals for impairments during wet weather.

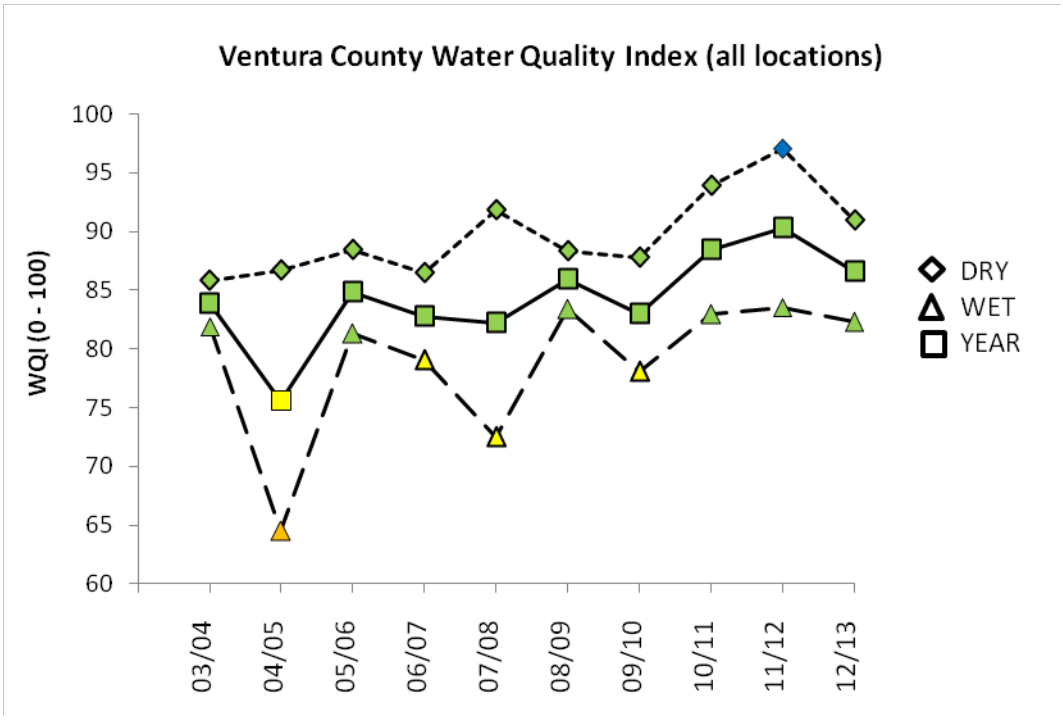


Figure 9-19 Water Quality Index trends for all locations combined.

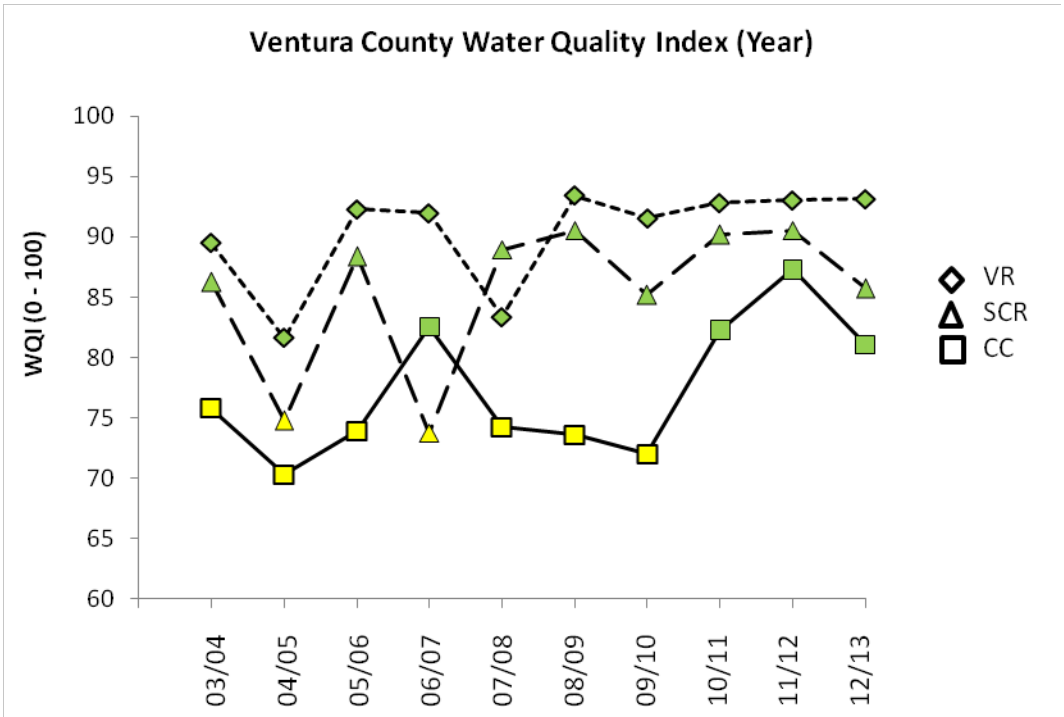


Figure 9-20 Combined wet and dry Water Quality Index trends for each receiving water station.

Trends of sub-indices are shown in Figure 9-21. The sub-indices quickly indicate what constituent classes are associated with drops of the overall Index. For instance, a low Index score in 2004/05 during wet weather (Figure 9-9) was caused by low sub-index scores for metals and toxicity.

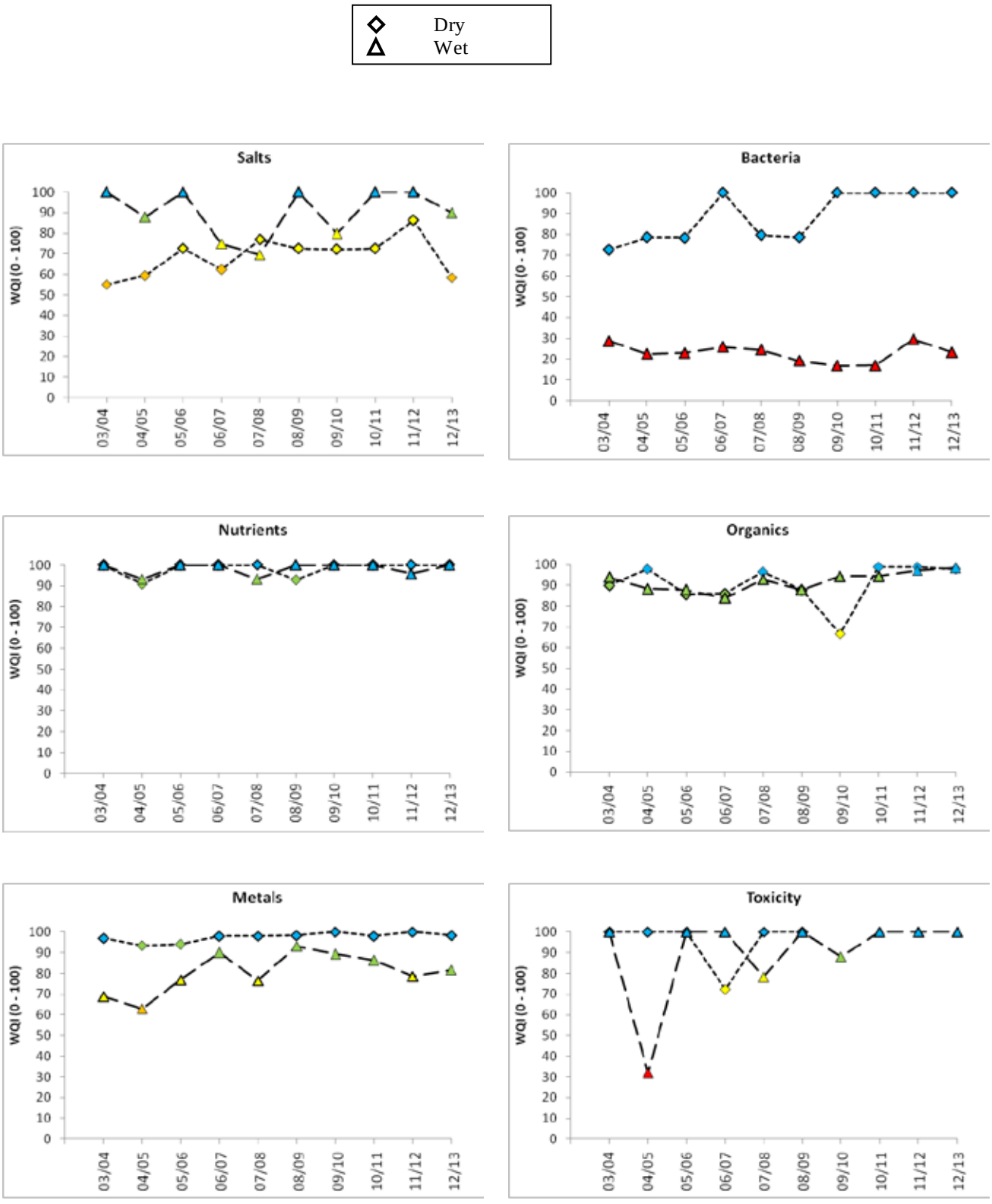


Figure 9-21 Sub-index trends with grades indicated by color codes

Table 9-40. 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				

9.8.4 **Aquatic Toxicity Results**

No receiving water samples from the Mass Emission stations exhibited significant toxicity during the 2012/13 monitoring season, which can be seen in the IC_{50} column of Table 9-42 and Table 2-37, 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 9-41, and will be used for toxicity analysis during the first rainfall event of future years, as required by the NPDES Permit.

Table 9-41: Most Sensitive Species Selected for Annual Toxicity Testing

Site	Most Sensitive Species
ME-CC	Topsmelt*
ME-SCR	Purple sea urchin (substituted Topsmelt for 2012/13)
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

The first flush event was sampled for all fourteen stations in the 2012/13 season. The first flush occurred during Event 1 (October 11, 2012) for MO-OJA and Event 2 (November 17, 2012) for all other stations. The results are summarized in Table 9-42 and Table 2-37. More detailed results are available in Appendix I in Attachment D. All tests were performed as required with the exception of the test organism for ME-SCR and the Toxicity Identification Evaluation study (TIE) for MO-HUE, as explained below.

The ME-SCR sample was delivered to the laboratory on the afternoon of Saturday, November 17th. The most sensitive species for ME-SCR is the purple sea urchin. The test for toxicity with purple sea urchin is the observation of egg fertilization rate. However, the twenty brood organisms failed to spawn at the laboratory after the method to induce gamete release was performed. The laboratory was unable to procure more sea urchins within the sample holding time. Past TIEs have frequently yielded inconclusive results, leaving the presumption that the toxicity was from volatile compounds, or other constituents whose toxic properties reduced over time. In order to analyze the sample within holding time and reduce the potential loss of toxic signal, the most sensitive species for both Ventura River and Calleguas Creek – *Atherinops affinis* (silverside topsmelt) was substituted for the test. The Program will continue to work closely with the laboratory to inform them of pending sampling events and the organisms needed for toxicity tests, however since toxicity testing requires the use of living organisms, their supply cannot be guaranteed. The Regional Board Executive Officer was informed that the toxicity test could not be performed per the requirements of the Permit.

Table 9-42. 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 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
ME-VR2	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
ME-SCR*	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00

* Topsmelt substituted for most sensitive species, purple sea urchin, which failed to spawn for the test.

Table 9-43 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 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-OJA	Event 1	10/11/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-MEI	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-OXN	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-SPA	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>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 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-FIL	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-HUE	Event 2	11/17/2012	50.00	2.00	58.33	72.22	25.00	4.00	41.93	61.43
MO-SIM	Event 2	11/17/2012	100.00	1.00	>100.00	>100.00	100.00	1.00	>100.00	>100.00
MO-THO	Event 2	11/17/2012	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 2	11/17/2012	100.00	1.00	>100.00	>100.00

The salinity for the MO-HUE sample was measured at the laboratory and determined to be 6 parts per thousand (ppt). The most sensitive species for MO-HUE, *Ceriodaphnia dubia*, can tolerate a maximum salinity of 1-2 ppt. As expected with such high salinity, mortality was high with 0% survival in 100% sample. 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%). Since the salinity was above the tolerance range for *Ceriodaphnia dubia* and salinity cannot be removed from the sample or addressed by a TIE treatment, it was decided to conduct an acute survival bioassay with *Hyalella azteca*, which have a higher salinity tolerance of 0-10 ppt, in place of a TIE. The survival rate for the *Hyalella* was 70% in 100% sample, which results in a TU_a value of 0.87 which does not require a TIE under the Permit. The IC25 was 94.32% and the IC50 was >100%.

MO-HUE discharges into J Street Drain, near where J Street Drain enters the Pacific Ocean. This area is influenced both by tides and by the status of the sand berm, which can cause backwater effects. Since the MO-HUE site salinity is strongly influenced by the ocean, with measured levels of 0.3-7.7 ppt, a different approach for selecting an organism may be needed for this site. For salinity below 2 ppt, *Cerioadaphnia* is the preferred organism as it was determined to be the most sensitive species and the samples used for that determination were both below 1 ppt. However, in higher salinity samples, a different organism may

be needed. For future toxicity bioassays, *Cerioadaphnia* will be utilized however if the salinity is determined to be above 2 ppt, a second bioassay using topsmelt (*Atherinops affinis*) will be requested to verify whether salinity is the likely cause of any mortality. Topsmelt is a euryhaline organism that can tolerate salinities of 3-36 ppt.

9.9 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.

9.9.1 2013 Dry Season Monitoring

For most jurisdictions, monitoring occurred at the associated Major Outfall monitoring station; however, as anticipated, inadequate flow was encountered at two of the Major Outfall stations prompting the relocation of these sampling sites. Receiving water monitoring is not part of this Permit requirement. The nine jurisdictions with sampleable dry-season, dry-weather Major Outfall locations were: Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Santa Paula, Simi Valley, Thousand Oaks, and Ventura. For the remaining two jurisdictions, the list of alternate sites was used to select a location with suitable flow. For Port Hueneme, the site was moved upstream to Bubbling Springs Park (Port Hueneme-3) to reduce ocean influence from the backwater effects caused by the sand berm near J Street Drain, and the County Unincorporated site was moved from Happy Valley Drain in Meiners Oaks to the Arroyo Santa Rosa in the Santa Rosa Valley (Unincorporated-4) due to a lack of flow at all other listed sites.

Sampling took place on two days. Fillmore-1 (MO-FIL), Oxnard-1 (MO-OXN), Port Hueneme-3 (DRY-HUE3), and Ventura-1 (MO-VEN) were sampled on August 12, 2013. Camarillo-1 (MO-CAM), Moorpark-1 (MO-MPK), Ojai-1 (MO-OJA), Santa Paula-1 (MO-SPA), Simi Valley-1 (MO-SIM), Thousand Oaks-1 (MO-THO), and Unincorporated-4 (DRY-UNI4) were sampled on August 13, 2013. There was at least 72 hours of dry weather preceding each sampling event.

Grab samples for total coliform, *E. coli*, total hardness, total organic carbon, and three dissolved metals: copper, lead, and zinc, were collected and analyzed. 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 D. Constituents outside of water quality standards are in Table 9-44.

Table 9-44. Dry Season constituents detected above water quality standards

Dry Season 2013 Elevated Levels								
Calleguas Creek Watershed								
Constituent	**MO-CAM**	**MO-MPK**	**MO-SIM**	**MO-THO**	**DRY-UNI4**	**Units**	**Basin Plan Objective**	**CTR Objective**
E. coli		2143		309	12033	MPN/100 mL	235	
pH	10.17					pH Units	8.5	
[a] Hardness = 360 mg/L								
Santa Clara River Watershed								
Constituent	**MO-SPA**	**MO-OXN**	**MO-FIL**	**MO-VEN**		**Units**	**Basin Plan Objective**	**CTR Objective**
E. coli			2613	364		MPN/100 mL	235	
pH		9.08		8.51		pH Units	8.5	
Copper, Dissolved		55[b]		74[b]		µg/L		29.28 [b]
[b] Default Hardness = 400 mg/L								
Ventura River Watershed								
Constituent	**MO-OJA**					**Units**	**Basin Plan Objective**	**CTR Objective**
E. coli	4352					MPN/100 mL	235	
Pacific Ocean								
Constituent	**DRY-HUE3**					**Units**	**Basin Plan Objective**	**CTR Objective**
E. coli	14136					MPN/100 mL	235	
Dissolved Oxygen	2.73					mg/L	5	

9.9.2 **2012 Dry Season Follow Up**

High levels of bacteria and uncommonly high levels of copper were detected at Camarillo-1(Camarillo Hills Drain) during 2012-DRY. Follow-up samples were collected on October 17, 2012, (prior to the first rainfall of the wet season) to look for the source of the elevated levels. There are multiple connections to Camarillo Hills Drain upstream of the Camarillo-1 site that flow intermittently. Since it is unknown which were flowing at time of sample collection during 2012-DRY, follow-up results cannot be directly related to previously collected samples but may indicate the geographic area of possible sources and create an opportunity to pinpoint and eliminate them.

On the day of follow up sampling, MO-CAM (Camarillo-1) and three upstream sites were able to be sampled. The upstream sites included a 45" RCP pipe from an apartment complex (Apartments-LB), a large box drain from a predominantly residential neighborhood (Rosewood), and ponded flow upstream of a temporary dam installed above a channel construction site (Carmen Dam). There were no obvious contributors to the high copper levels seen during 2012-DRY. For *E. coli*, the Rosewood drain sample was quite high, however it started flowing after the downstream sample at MO-CAM had already been collected so it would not be part of the MO-CAM sample. The ponded water at the Carmen Dam site was

well below the top of the dam, so would not have contributed to the MO-CAM follow up sample. The source of the high levels is inconclusive from these samples, and was likely a one-time or intermittent event for neither *E. coli* nor copper were above WQS during the 2013-DRY event.

Table 9-45. Dry Season Follow Up Results

Location	Date	Time	Estimated Flow (cfs)	Total Copper (µg/L)	Dissolved Copper (µg/L)	Total Coliforms (MPN/100ml)	*E. coli* (MPN/100ml)
MO-CAM	8/16/2012	1020	0.02	190	99	613,100	19,863
Camarillo-1 (MO-CAM)	10/17/2012	855	<0.1	6.3	NS	153,900	5,475
Apartments - LB	10/18/2012	905	<0.1	9.5	NS	1,413,600	683
Rosewood	10/19/2012	935	<0.1	16	NS	461,100	24,192
Carmen Dam	10/20/2012	1000	Ponded	3.5	NS	65,000	161

9.10 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. The Mass Emission Stations were selected to be the trend sites for each watershed and are monitored each year for the duration of the study.

With help from Aquatic Bioassay & Consulting Laboratories, Inc. (ABC), sampling was conducted June 6, 2013 through July 16, 2013. The reconnaissance and chemistry data was submitted electronically to SCCWRP by the appropriate due date (September 30, 2013 for reconnaissance; November 30, 2013 for chemistry). The California Rapid Assessment Method (CRAM), physical habitat (P-HAB), and toxicity data are due November 30, 2013. 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, 2014.

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 did not produce interim reports for the second through fourth years (2010 - 2012) of the study. The final report for the five year study is estimated to be available in late 2014 or early 2015. Links to all reports will be included in future Annual Water Quality Monitoring Reports, as they become available.

9.11 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 9-46 below. Compliance with limits set by the State of California for each parameter was achieved in over 97.4% of samples. *Heal the Bay's 2012-2013 Annual Beach Report Card (BRC)* gave all Ventura County Beaches an A grade for summer dry and winter dry weather. The report card grades for wet weather was also excellent, with 20 of 21 (95%) of locations receiving A or B grades. Grades are given on an A to F scale, with higher grades representing lower risk of illness for beachgoers. According to the BRC, "Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods."

Table 9-46 Beach Water Quality Monitoring Results July 1, 2012 through June 30, 2013

	Total Coliform (TC)	Fecal Coliform (FC)	Enterococcus (Entero)	FC:TC
Number of Samples	1,584	1,584	1,584	1,584
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	4	12	41	10
% Samples within limits	99.7	99.2	97.4	99.4

SS = Single Sample

9.12 TMDL MONITORING

TMDL monitoring is achieved by following the L.A. Regional Board's Executive Officer approved TMDL Monitoring and Reporting Plans prepared and implemented by the TMDL Responsible Parties. The Permit addresses the TMDL monitoring requirements by maintaining the responsibility of monitoring and reporting with the Responsible Parties of the TMDLs. Part 3 section A.5. of the Permit states:

> *"If TMDL requirements, including Implementation Plans and Reports, address substantially similar requirements as the MS4 permit, the Executive Officer may approve the applicable reports, plans, data or submittals under the applicable TMDL as fulfilling the requirements under the MS4".*

Monitoring for the TMDLs are performed under compliance monitoring plans approved by the L.A. Regional Board's Executive Officer, and the Permit does not include any monitoring or reporting for TMDLs beyond the adopted TMDL requirements. These approved plans detail the monitoring effort involved, including how and when the results are to be reported to the Regional Board, and do not incorporate the Program's Stormwater Monitoring Program.

Also, for the TMDLs identified in the Permit that specifically mention reporting, the Permit states that responsible "MS4 Permittees, either independently or in conjunction with other stakeholders, shall submit an annual progress report". It does not identify the Principal Permittee as responsible to collect, analyze

or report the information regarding TMDL compliance, but rather keeps that responsibility with Permittees identified in the TMDL.

TMDL monitoring requires significant coordination among multiple Responsible Parties, many of which do not operate MS4s. The District as Principal Permittee does not collect monitoring data for any TMDLs. Many of the Permittees operate under separate implementing legal instruments (Memorandum of Agreements such as Ventura River or Santa Clara River TMDL Parties or a Joint Powers Authority such as the Calleguas Creek Watershed TMDL Parties) for common sharing of monitoring and reporting costs and collection of data and studies. In these cases, the TMDL monitoring programs are designed to meet the requirements of all of the Responsible Parties participating in the TMDL monitoring program. As such, monitoring data that is gathered by the TMDL monitoring programs are reviewed, evaluated, and owned by the TMDL monitoring programs. The data cannot be officially used by individual Permittees or the District for reporting or public release until the final reports have been submitted to the Regional Board.

In the adoption of TMDLs by the Regional Board as Basin Plan Amendments, unique schedules for submittal of data and reports were established. TMDL monitoring is conducted in accordance with requirements and schedules outlined in Basin Plan Amendments and TMDL monitoring plans that are approved by the Regional Board Executive Officer independently of the Program requirements. Routinely, the reporting periods and dates for TMDL Weekly, Annual, or periodic Reports and monitoring data submittals do not correspond to the Countywide Stormwater Permit Annual Report due by December 15th each year.

Additionally, recognizing that reporting improvements could facilitate better understanding of watershed conditions, we have initiated discussions with the Calleguas Creek Watershed TMDL Parties in hopes of producing a better, more integrated report for both programs. However, progress on integration will require more than communication between MS4 and TMDL Responsible Parties, as the Regional Board will also have to be willing to allow changes in the approved monitoring programs in Ventura County (e.g. stormwater, wastewater, and agriculture waiver). Regional Board staff assistance has been requested in facilitating this integrated approach for the TMDL and MS4 monitoring program and could be improved if POTW and Ventura County Irrigated Lands Program monitoring programs are also considered.

Nonetheless, all available final TMDL reports and data for the reporting period of July 1st through June 30th have been compiled in Attachment E.

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