



Mojave River Watershed Group
Small Municipal Separate Storm Sewer System General Permit

Waste Discharge Identification Number
6B336SM40301

Fiscal Year 2010-11 Annual Report

Prepared for:

**California Regional Water Quality Control Board
Lahontan Region**

14440 Civic Drive, Suite 200
Victorville, CA 92392

Prepared by:



California Watershed Engineering

2100 E. Howell Avenue, Suite 209
Anaheim, CA 92806-6003

TEL (714) 385-2600 | FAX (714) 385-2605 | www.cwecorp.com

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Acronyms

BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CESSWI	Certified Erosion, Sediment, and Storm Water Inspector
LID	Low Impact Development
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MRWG	Mojave River Watershed Group
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
QSD	Qualified Storm Water Pollution Prevention Plan Developer
QSP	Qualified Storm Water Pollution Prevention Plan Practitioner
RWQCB	Regional Water Quality Control Board
SWMP	Stormwater Management Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WQMP	Water Quality Management Plan
YELC	Youth Environmental Leadership Council

1.0 Introduction

Phase II Small MS4 General Permit

The Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit program is intended to address potentially adverse impacts to surface water quality by instituting the use of controls on unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Stormwater discharges from MS4s in urbanized areas are a concern because of the potential for these discharges to contain pollutants. Concentrated development in urbanized areas substantially increases impervious surfaces, such as city streets, driveways, parking lots, and sidewalks, on which pollutants from concentrated human activities can settle and remain until a storm event washes them into nearby storm drains.

Common pollutants include pesticides, fertilizers, oil and grease, trash and other debris, metals, and sediment. Another concern is the possible illicit connections of sanitary sewers, which can result in high levels of fecal coliform bacteria entering the storm drain system. Stormwater runoff can pick up and transport these and other potentially harmful pollutants and discharge them untreated to waterways. Under some circumstances, these discharges can result in a loss in aesthetic value and contaminate local drinking water supplies.

Uncontrolled runoff from construction sites is a surface water quality concern because of the effects that sedimentation can have on local water bodies, particularly small streams. Numerous studies have shown that the amount of sediment transported by stormwater runoff from construction sites with no controls is significantly greater than from sites with controls. In addition to sediment, pollutants such as pesticides, petroleum products, construction chemicals, solvents, asphalts, and acids can be present at construction sites and have the potential to be transported by stormwater runoff. During storms, construction sites can be the source of sediment-laden runoff, which can overwhelm a small stream channel's capacity, resulting in streambed scour and streambank erosion.

Mojave River Watershed Group General Permit Coverage and Annual Report

In accordance with the State Water Resources Control Board (SWRCB) Water Quality Order No. 2003-0005-DWQ and National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004, the Town of Apple Valley, Cities of Hesperia and Victorville, and County of San Bernardino, collectively referred to as the Mojave River Watershed Group (MRWG) agencies, submitted a Notice of Intent (NOI) and Stormwater Management Program (SWMP) to the Lahontan Regional Water Quality Control Board (RWQCB) in August 2003 requesting coverage under the Phase II Small MS4 General Permit. The RWQCB accepted the SWMP and issued coverage under the Phase II permit to the MRWG Permittees in February 2005.

The MRWG SWMP consists of a comprehensive plan to develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable (MEP) to protect surface water quality. The SWMP includes the following six Minimum Control Measures (MCMs):

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management in New Development and Redevelopment
6. Pollution Prevention and Good Housekeeping for Municipal Operations

Each MCM consists of various implementation measures and Best Management Practices (BMPs) to prevent or reduce adverse affects on stormwater runoff and receiving water bodies. In addition, each MCM has several measureable goals to demonstrate compliance and effective implementation of the stormwater management program. Since the first 5-year term of the Small MS4 General Permit has expired, the MRWG continues to implement its MCMs but there are no new measurable goals at this time.

This Annual Report covers the period from July 1, 2010 through June 30, 2011, which represents the seventh year of the program. The Annual Report is an evaluation of the MRWG's stormwater program and provides a status of implementation and compliance. It also includes an assessment of the effectiveness of the selected BMPs.

1.1 Summary of Major Accomplishments for Fiscal Year 2010-11

This Unified Annual Report will detail the successful implementation of all MCMs and demonstrate Permittee compliance with the Phase II Small MS4 General Permit. Major accomplishments between July 1, 2010 and June 30, 2011, include but are not limited to:

- Distribution of pesticide, paint, and fertilizer outreach materials to "do-it-yourselfers" through partnerships with local businesses.
- Member agency sponsored litter clean up events resulting in the collection of 240 tons of trash and recycling of 8.6 tons of material and green waste.
- Creation of social media accounts to engage the public and expand upon the public education and outreach program.
- The MRWG website was updated to include links to social media accounts and provide easy access to educational stormwater pollution prevention videos and printable educational materials.
- Pollutant load reduction of 506 tons as a result of household hazardous waste collected.
- Adoption of a Countywide Landscaping Ordinance that incorporates post-construction Low Impact Development (LID) principles.
- A Draft LID Ordinance was developed and is under review by various County Departments.
- Establishment of effective relationships with builders to quickly resolve deficient construction site BMPs and avoid enforcement actions.
- Finalization of a Water Quality Management Plan (WQMP) and Post-Construction BMPs Guidance Manual to assist project applicants with the design and preparation of engineering plans to incorporate effective post-construction BMPs to treat and infiltrate stormwater runoff from discretionary projects.
- Completion of comprehensive stormwater training programs for illicit discharge detection and elimination, construction site stormwater runoff controls, post-construction stormwater management in new development and redevelopment, and municipal operations. Member agencies also participated in Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer/Qualified SWPPP Practitioner (QSD/QSP) and Certified Erosion, Sediment, and Storm Water Inspector (CESSWI) review courses and exams.

2.0 Background

The Mojave River Watershed encompasses approximately 4,500 square miles and is located entirely within San Bernardino County. The total population in the Mojave River Watershed was approximately 390,000 people in 2010 with much of the existing population concentrated in the Victor Valley, which is located north of the San Bernardino Mountains and borders the edge of the Mojave Desert. The Victor Valley includes the communities of Adelanto, Apple Valley, Hesperia, Lucerne Valley, Oak Hills, Phelan, Victorville, and Wrightwood. Additional urban growth is expected throughout the watershed. The population for the entire watershed is projected to reach nearly one-half million people by the year 2015.



The primary geographic and hydrologic feature of the watershed is the Mojave River. The headwaters of the Mojave River are in the San Bernardino Mountains, which annually receives greater than 40 inches of precipitation at its highest elevations. Much of the winter precipitation in the San Bernardino Mountains falls in the form of snow that provides spring recharge to the Mojave River system. Historically, the annual recharge from the headwaters is approximately 75,000 acre-feet. The Mojave River channel, through both surface and subsurface flow, transects the watershed a linear distance of approximately 120 miles to its terminus at Silver Dry Lake near the Community of Baker. Aside from intense storm events, the Mojave River channel is typically dry downstream of the Mojave Forks Dam except in select locations where groundwater is forced to the surface by geologic structures.

The Mojave River Watershed is divided into five sub-basins based on hydrologic features. The United States Geological Survey (USGS) Report 95-4189 identified these sub-basins as:

1. Headwaters – Tributaries above the Mojave Forks Dam;
2. Upper Basin – Mojave Forks Dam to the Lower Narrows at Victorville;
3. Middle Basin – Lower Narrows to the Waterman Fault at Barstow;
4. Lower Basin – Waterman Fault to Afton Canyon; and
5. Tailwater – Afton Canyon to Silver Lake.

The sub-basins include an aquifer system consisting of two interconnected aquifers – floodplain aquifer and regional aquifer. The floodplain aquifer is composed of sand and gravel, which is as much as 250 feet thick, and generally follows the surface expression of the Mojave River. The regional aquifer, which is composed of sand, silt, and clay, generally underlies and surrounds the floodplain aquifer.

3.0 Effectiveness Assessment of Fiscal Year 2010-11

Program Effectiveness Assessment Strategy

The SWMP is comprised of six (6) program elements known as MCMs, each with specific control measures to reduce pollutants in urban and stormwater discharges. These MCMs are being implemented on a jurisdictional and watershed wide basis and each MCM is iterative and incorporates phases of assessment to determine whether programmatic outcomes are being achieved. This assessment phase is formalized as the Annual Report. The strategy for the Annual Report is based on the selection and annual evaluation of implementation assessment measures.

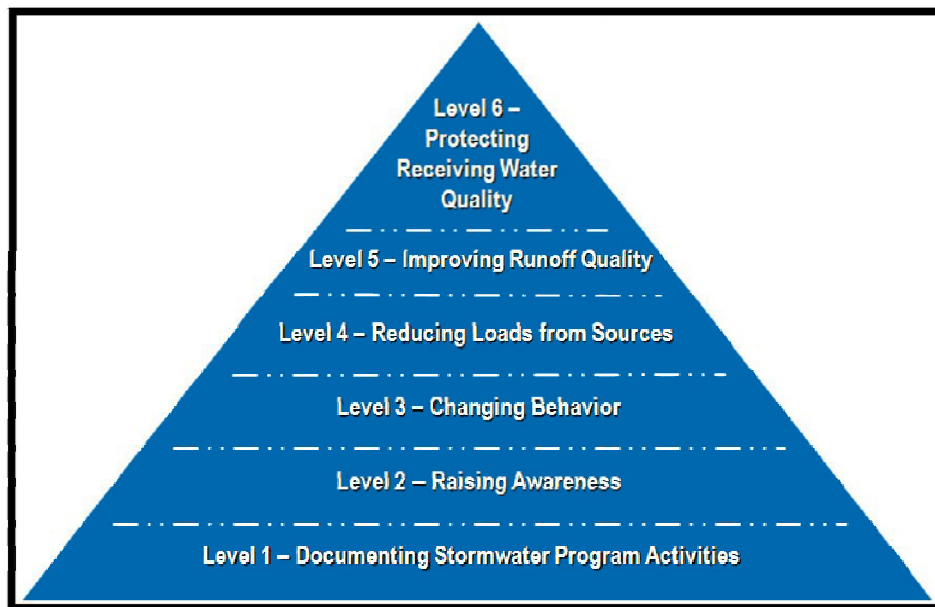


Figure 3-1 Approaches to Evaluate Stormwater Program Effectiveness

Source: CASQA, 2007 (www.casqa.org)

Outcomes are the result of an activity, program element, or overall program and can be characterized in terms of six levels. Figure 3-1 shows these levels as a gradation from activity-based to water quality-based outcomes and illustrates the progression of each successive step toward the ultimate goal of environmental improvement. In general, Levels 1 to 3 can be considered *Implementation Outcomes*, Levels 5 and 6 *Water Quality Outcomes*, and Level 4 a combination of the two types. Each level has value in informing the management process and it bears emphasis that not all are necessary or possible in every instance (CASQA, 2007)¹.

Assessment Measures

Assessment measures can be categorized many different ways. In this Annual Report, two categories are recognized, one related to the short term confirmation of BMP implementation and the other to long term verification of environmental improvement. In essence, the categorization of measures reflects two basic assessment questions:

- Are program elements being implemented correctly?

¹ California Stormwater Quality Association (CASQA), 2007. "Municipal Stormwater Program Effectiveness Assessment Guidance."

- Are environmental improvements being realized?

Programmatic and environmental indicators are conceived by the U.S. Environmental Protection Agency (USEPA) as having a hierarchical relationship as shown in Table 3-1. This relationship further illustrates the fact that environmental outcomes rest on, or follow from, jurisdictional program implementation. Moreover, it points to the reality that scientifically robust evidence of changing ecosystem quality will follow confirmation of program implementation and should not be expected to be evident concurrently.

Table 3-1 Hierarchy of Indicators (USEPA, 1998)		
Environmental Indicators	6	Ultimate Impacts: ➤ Ecological ➤ Health ➤ Welfare
	5	Body Burden/Uptake
	4	Ambient Conditions
	3	Discharge/Emission
Programmatic Indicators	2	Actions by Regulated Community
	1	Actions by Regulators

Key attributes of assessment measures include:

- Measurability (statistically measurable on a frequent basis);
- Relevance (significant, demonstrable relation to strategy and objectives);
- Reliability (easily documented and reproducible);
- Availability (based upon data obtainable at reasonable cost);
- Scientific validity (based on sound science), and
- Replicability (capable of being regularly updated).

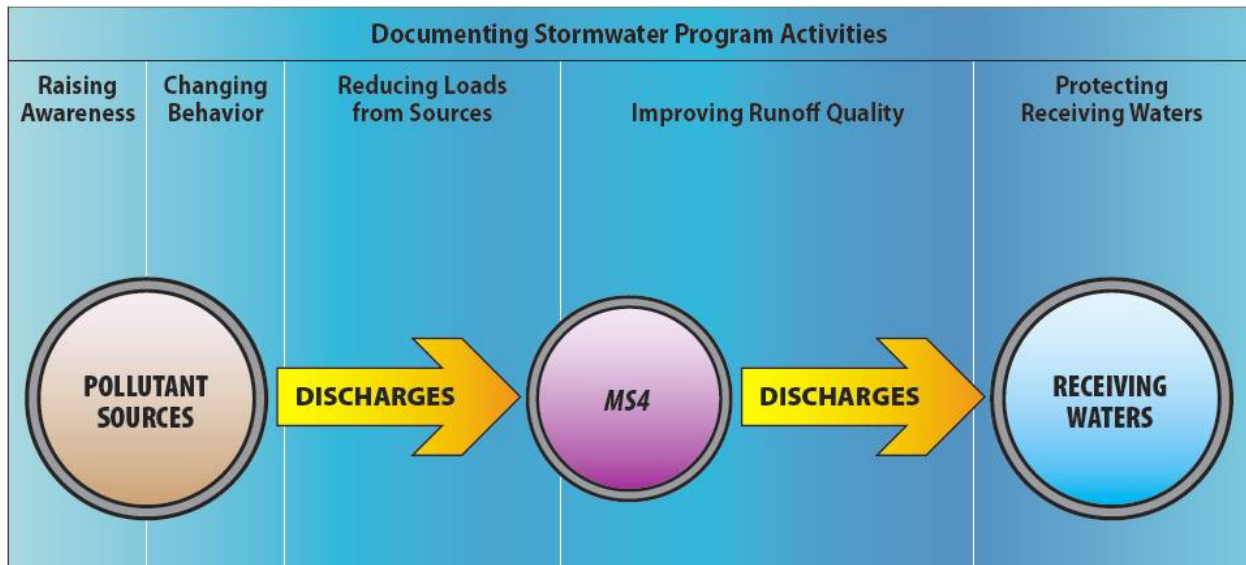


Figure 3-2 Documenting Stormwater Program Activities

Effectiveness Assessment

A program of effectiveness assessment requires the initial establishment of a set of baseline conditions. Thereafter, effectiveness can be evaluated by comparisons of successive years of indicator information against the baseline data. Where the period of evaluation is characterized by the implementation of new program requirements, determinations of program effectiveness will initially be limited to confirmation of program implementation. However, it must be recognized that direct measures of program effectiveness may not be available within the timeframe of the initial five-year Phase II Small MS4 General Permit. This lack of direct measure confirmation arises because:

- Baseline conditions are not readily established;
- Water quality changes in response to program implementation are likely to be very slow; and
- Establishing a link between receiving water condition and program activities is difficult at the watershed scale when programs are being implemented incrementally within the development and redevelopment cycle.

The process of stormwater program effectiveness assessment is conducted annually and focuses on program implementation. Inferences about the connection of management program elements to water quality improvements made in these assessments will predominantly be drawn from the assessment of programmatic indicators and indirect measures of progress. In addition, the outcome of the assessment may propose revisions to the SWMP. The effectiveness assessments and Outcome Levels are presented below for each of the individual MCMs.

While program effectiveness assessment is a key step in the iterative adaptive process of program implementation, it should be realized that effectiveness assessment itself is a part of the management process that is also evolving. Assessing program effectiveness is recognized as a challenge for program managers across California, and the MRWG member agencies support the effort of the California Stormwater Quality Association (CASQA) to develop guidance in this area at a statewide level. This guidance was published as the *Municipal Stormwater Program Effectiveness Assessment Guidance* (CASQA, 2007) and will be used for the purpose of assessing the MRWG's SWMP implementation efforts to comply with the Phase II Small MS4 General Permit and reduce the discharge of pollutants from the MS4 to the MEP to protect water quality.

3.1 MCM 1 – Public Education and Outreach

The Phase II Small MS4 General Permit requires the implementation of a public education program to distribute educational materials to the community and conduct outreach activities about the impacts of stormwater discharges on water bodies and steps the public can take to reduce pollutants in stormwater runoff.

The MRWG SWMP outlined a plan to meet the requirements of this MCM with education and outreach programs for three diverse groups: students, homeowners, and business people. The objectives of the Public Education and Outreach Program are to:

- Reduce the amount of stormwater pollution in the Mojave River Watershed;
- Change the mind-set of a large and diverse population while educating target audiences about solutions to stormwater pollution;
- Improve general understanding of urban and stormwater runoff pollution prevention methods;
- Create synergy by using an overarching campaign approach, “look” and tone, and by unifying multiple pollution prevention efforts;
- Maximize outreach efforts and implement specific tactics to shift audiences from the education phase to the personal responsibility phase;
- Impact more than one audience at a time with a single campaign;
- Build bridges and forge partnerships that integrate city and jurisdictional programs; and
- Document whether the education outreach effort resulted in behavior change that reduced pollution.

3.1.1 Implementation Status

The MRWG successfully accomplished the objectives of MCM 1, Public Education and Outreach. Program accomplishments included participating in local and regional events to disseminate outreach materials, distributing educational brochures and other handouts at high traffic locations for the targeted consumer, implementing an elementary school program to change the students behavior and views on pollution prevention, creating Twitter and Facebook accounts to expand outreach efforts, and updating a watershed specific website to provide residents, businesses, and City and County representatives with additional educational materials and references.

Environmental Outreach Booths at Local and Regional Events

To reach the target audience of “do-it-yourselfers”, the MRWG participated in six (6) community events where the prime audience would be present. The six events included Hesperia Days Celebration from September 18-19, 2010, Apple Valley Fall Festival on September 25, 2010, High Desert Gateway Celebration on October 16, 2010, 26th Annual High Desert Home, Recreation, and Lifestyle Show from November 5-7, 2010, Girl Scouts Community Clean-Up on March 26, 2011, and 27th Annual High Desert Home and Garden Show from April 1-3, 2011. The MRWG booths displayed pictures of litter caught in storm drains and conveyed proper trash and household hazardous waste disposal messages. Materials such as tip cards, household hazardous waste collection tear sheets and Recycle Alley flyers were distributed in an effort to educate homeowners on stormwater pollution and ways to prevent it. City and County staff was able to hand out public education materials and speak one-on-one with event attendees regarding stormwater pollution prevention. Booth



visitors were asked to complete a "Protect Your Home" Pledge stating they will follow a set of guidelines to prevent stormwater pollution in the High Desert Community. This year, the MRWG decided to shift its focus from distributing educational material to getting more High Desert residents to commit to changing their water pollution prevention habits by signing a "Protect Your Home" Pledges. Representatives also used the Enviroscape, an educational tool for children that illustrates how the storm drain system works and pollutants are transported.

Combined Homeowner and Business Outreach Program and Material Distribution

To yield the highest pollution reduction, the Public Education and Outreach Program executed a comprehensive set of outreach activities to target homeowners and local businesses. This included forming new and reinforcing existing partnerships with garden centers/nurseries, paint stores, restaurants, home improvement stores, auto shops, community locations and pet facilities in order to place outreach materials at the finger tips of consumers. To minimize costs and maximize resources, the program sought to build on the relationships with the business to secure prizes and giveaway items for workshops, community outreach events or social media contests related to stormwater pollution prevention.

The campaign focused on "pollutant specific outreach," since the majority of stormwater pollution is created by certain pollutants such as pesticide, fertilizer, paint, and pet waste. Educational materials promoted simple pollution prevention behaviors associated with these specific pollutants. The materials were placed in the proximity of products containing the potential pollutants. Outreach materials included tear sheets, tip cards, flyers, and posters. Tear sheets listed locations of household hazardous waste



centers, as well as hours of operation, and were placed on counters and checkout stands. Tip cards provided easy-to-follow pollution prevention tips and were placed on counters in the appropriate section. Shelf talkers, with tear sheets attached, provided the same information and were placed in the appropriate aisles relating to the specific pollutant. This allowed customers to tear off individual sheets and take the information with them. Educational material was also included in the customers' bags when they purchased items that could contaminate stormwater. Additionally, the program utilized posters to encourage the proper disposal of household hazardous waste and encourage pet owners to pick up after their pets in order to prevent pollution.

In addition, owners, managers, and employees were educated on stormwater pollution. Once educated, the staff, seen as experts by the customers, served as catalysts to spread the stormwater pollution prevention message to "do-it-yourselfers" who may be unintentionally engaged in various polluting activities during their home improvement projects, or pet owners who may not be picking up after their pets resulting in pollution. By having staff deliver the stormwater pollution prevention message, the program has the advantage of "the messenger" constantly being at the customers' disposal, thereby being able to effectively reach and educate a large group of potential polluters. A new "Secret Shopper" Program was also introduced to observe and assess if trained employees were sharing the stormwater pollution prevention information with their customers.

School Outreach

Environmental education promotes public awareness and increases knowledge of environmental issues. The earlier that environmental education is provided, the more likely that it will have a strong effect on an individual's values, and in turn, influence lifestyle. As such, the MRWG performed outreach to elementary school students by offering pollution prevention presentations to schools throughout the area.



As part of the school assemblies, the MRWG designed an interactive presentation complete with a charades game, live animal references, and prizes. Assemblies taught children about stormwater pollution and the Mojave River Watershed, and how pollution can negatively impact the High Desert Community. The program allowed schools the flexibility of choosing which setting they preferred.



The presentation utilized an interactive slideshow. This interactive slideshow connects students with their surroundings, teaching them about the storm drain system and how litter in the Mojave area impacts rivers. Presentations introduced students to stormwater pollution and the impact that their actions have on the environment. It stressed responsibility and awareness within communities and ways in which students can help improve their surroundings. Presentations were also a call to action. The program began an "Official Stormwater Trooper" Workshop for the students, to encourage them to take pride in their community and take action to keep it pollution free.

Additional outreach activities included developing and distributing newsletter articles, both in English and Spanish, encouraging parents to talk to their children about stormwater pollution education and to take an active role in guiding environmentally conscientious children. The MRWG also partnered with the Victor Valley College Science Department to conduct three (3) stormwater education workshops to sixth through eighth graders at the 5th Annual Youth Environmental Leadership Council (YELC). The event was so successful that the MRWG was invited to attend next year's event.

Media/Social Media Outreach

The program utilized traditional media and social media to appeal to the different age groups of the residents within the MRWG area. While traditional media outlets (newspapers, radio, etc.) appeal to older generations and usually do not ignite conversations, social media encourages full engagement and promotes behavior change through interactions with others in the community.

To reach out to traditional media, MRWG produced a “canned” weather advisory sent to local media outlets during key times, periods of heavy rain, unexpected rain, summer monsoons, etc. During the next Fiscal Year, this campaign will be expanded upon, hopefully leading to a feature story on the issue.

Social media played a major role in communicating with the High Desert public. A Facebook page was established to generate conversations about stormwater, gain feedback through the use of polling, and provide a forum for our audiences to communicate and share photos with one another.



A Twitter account, under the username @MojaveRiver, was also established and focused on sharing more timely information including weather advisories, local event announcements, and reminders for safe use of products during rain or wind.

MRWG Website

The MRWG updated and edited the www.mojaveriver.org website. This website is a resource for residents, businesses, and City and County representatives to access information related to stormwater pollution and the Mojave River Watershed. It is also a source of news and information on the program's efforts to reduce stormwater pollution. It provides information on what residents, businesses, and developers can do to prevent stormwater pollution. The website has links to:

- General Information;
- Pollution Prevention Tips;
- Household Hazardous Waste and Oil Recycling;
- Pollution Reporting;
- School Outreach Materials;
- Educational and Reference Materials; and
- Event Calendars.

The website includes links to the group's social media accounts, which directs website visitors to the MRWG's Facebook and Twitter accounts. The website's home page also includes a live Twitter feed that displays useful facts about the watershed and contains thought provoking questions that encourage the visitor to think about the importance of keeping the Mojave River pollution free.

Distributed outreach materials included the website address as a resource for more information on stormwater pollution prevention and where to properly dispose of household hazardous waste.

3.1.2 Summary of BMPs

Environmental Outreach Booths at Local and Regional Events

Table 3-2 summarizes the outreach materials disseminated at the six community outreach events. Four hundred thirty-eight signed pledge forms were received from event goers pledging to implement stormwater pollution prevention practices.

Table 3-2 Outreach Materials Distributed via Environmental Outreach Booths	
Educational Material	Quantity Distributed
Tip cards, tear sheets, and flyers	381

Combined Homeowner and Business Outreach Program and Material Distribution

Partnerships were maintained with 91 garden centers/nurseries, paint stores, restaurants, home improvement stores, auto shops, community locations and pet facilities to disseminate outreach materials within the local community. The MRWG worked with stores to train more than 100 employees on BMPs and the proper disposal of pesticides, fertilizers, paint, and pet waste, furthering their ability to pass on these pollution prevention messages to their customers. Table 3-3 highlights the business types and number of partnerships the MRWG has been able to establish and maintain.

Table 3-3 Business Outreach Efforts and Partnerships	
Business Type	Number of Partnerships
Garden Centers/Nurseries	10
Paint Stores	8
Restaurants	5
Home Improvement Stores	9
Auto Shops	36
Community Locations	6
Pet Facilities	17

The results in Table 3-4 illustrate the number of prizes and giveaway items that were donated to the program through the MRWG's partnership with 91 garden centers/nurseries, paint stores, restaurants, home improvement stores, auto shops, community locations and pet facilities. The 879 items that were collected were used as promotions in workshops, community outreach events or social media contests.

Table 3-4 Donation Items Collected	
Business Name	Items Secured
Amy's Mexican Restaurant and Bar	2 Gift Certificates
Buffalo Wild Wings	3 Gift Certificates
Golden Corral	3 Complimentary Buffet Tickets
John's Incredible Pizza Co.	2 Complimentary Buffet Tickets
Oggi's Pizza and Brewery	4 Gift Certificates
PetCo	100 Tennis Balls
PetSmart	750 Pet Waste Bags
Town of Apple Valley Public Works	15 Reusable Bags

Table 3-5 illustrate the number of outreach materials distributed to homeowners through the MRWG's partnership with 91 garden centers/nurseries, paint stores, restaurants, home improvement stores, auto shops, community locations and pet facilities.

Table 3-5 Outreach Materials Distributed via Local Businesses	
Educational Material	Quantity Distributed
Tear sheets (list of household hazardous waste collection centers)	8,700
Tip Cards (tips on paint, pesticide, and fertilizer)	5,562
Posters (identified phone number and website)	171

School Outreach

The MRWG conducted school presentations to twelve (12) elementary schools and 6,458 students in Fiscal Year 2010-11. Table 3-6 documents the schools that participated in the outreach program and number of students educated at each assembly.

Table 3-6 Elementary School Presentations			
Name of School Location	City/Area	Number of Assemblies	Number of Students Educated
Rancho Verde Elementary School 14334 Pioneer Road	Apple Valley	1	600
Sandia Elementary School 21331 Sandia Road	Apple Valley	1	750
Kingston Elementary School 7473 Kingston Avenue	Hesperia	2	760
Krystal School of Science, Math, and Technology 17160 Krystal Drive	Hesperia	1	100
Challenger Elementary School 17738 Nevada Street	Victorville	2	1,067
Discovery School of Arts 13247 Amethyst Road	Victorville	2	300
Galileo Academy 17000 Silica Drive	Victorville	4	560
Hollyvale Elementary School 11645 Hollyvale Avenue	Victorville	2	580
Mojave Vista Elementary School 16100 Burwood Road	Victorville	1	966
Mountain View Montessori Charter School 12900 Amethyst Road	Victorville	3	175
Village Elementary School 15205 Ashley Glen Drive	Victorville	1	100
West Creek Elementary School 15763 Cobalt Road	Victorville	1	500
		Total	6,458

Media/Social Media Outreach

Table 3-7 summarizes the MRWG's implementation of its Social Media Outreach. Social Media was an effective tool for reaching out to High Desert residents and encouraging stormwater pollution prevention awareness. Facebook messages are similar to Twitter messages but include a higher likelihood of interactivity. Polls ask followers if they pick up after their pets, news stories provide background and a call to action, and tips help people make a difference in their community.

Table 3-7 Social Media Interaction Summary	
Twitter Account (@MojaveRiver) – First 6 Months	
Tweets	60
Followers	43
Following	86
Facebook Account	
Post Views	20,338
Post Feedbacks	139
Page Likes	86

MRWG Website

The program revamped the www.mojaveriver.org website to make it make informative, entertaining, and intuitive. Significant changes to the website included links to the MRWG's social media accounts and a school outreach section with assembly photos, educational videos, and science fair resources. The MRWG also incorporated an electronic Google calendar for residents and businesses to be informed of events taking place within the High Desert Region such as Household Hazardous Waste Drop-Off events. The website also includes educational materials, such as posters, tip cards, shelf talkers, and tear sheets containing pollution prevention information for downloaded in PDF format to be printed and easily used.



3.1.3 Program Effectiveness

Assessment methods are the specific activities, actions, or processes used to obtain and evaluate assessment data or information. For MCM 1, Public Education and Outreach, the effectiveness assessment methods used include confirmation, tabulation, surveys, and quantification. These methods can be summarized as follows:

- Confirmation consists of documenting whether an activity or task has been completed to document compliance with activity-based permit requirements.
- Tabulation consists of simple accounting and can be expressed in both absolute and relative terms. This method relies on recordkeeping and is useful in documenting trends over time.
- Surveys encompass a variety of methods designed to discern knowledge, attitudes, awareness, or behaviors of a specific target audience. Surveys gather a sample of data that is representative of a group by asking questions of a target audience.

- Quantification refers to efforts to quantify reductions in loading or runoff discharges, or improvements in environmental quality. There are two main approaches for using quantification methods, quantity tracking and pollutant load estimation.

The overall effectiveness of the Public Education and Outreach Program was determined to be at Outcome Levels 1 (Documenting Activities), 2 (Raising Awareness), 3 (Changing Behavior), and 4 (Reducing Loads from Sources).

Environmental Outreach Booths at Local and Regional Events

The effectiveness of the environmental outreach booths at the six (6) outreach events are considered to be at Outcome Levels 1, 2 and 3. The MRWG concludes that as a result of one-on-one interactions with event attendees and the dissemination of outreach materials to residents. The shift in focus from raising public awareness to changing behaviors resulted in 438 signed commitment letters to follow a set of guidelines to prevent stormwater pollution in the High Desert Community, a significant increase from the amount of pledges received in the previous Fiscal Year.

Combined Homeowner and Business Outreach Program and Material Distribution

It is realistic to deduce that the effectiveness of the combined homeowner and business outreach program conducted in partnership with garden centers/nurseries, paint stores, hardware stores, home improvement stores, and pet facilities can be assessed as Outcome Levels 1, 2, and 3. As described in Section 3.1.1, the MRWG was able to document, distribute outreach materials, and interact with residents, business owners, and employees at 91 different locations.

Homeowner and business outreach activities performed by the MRWG met the requirements of the Phase II Small MS4 General Permit and reasonably raised the target audience's awareness and understanding of stormwater pollution prevention measures.

Since homeowner and business outreach programs have been determined to be effective at Outcome Levels 1, 2, and 3, and based on the findings of the other MCMs, continued efforts and measures were taken to focus the outreach program in areas that provide the greatest opportunity to improve stormwater quality. These program areas included the following:

- Train Store Staff – Emphasis was put on educating more owners, managers, and employees on stormwater pollution while conducting outreach. This is because once educated, the staff, seen as experts by the customers, served as catalysts to spread the stormwater pollution prevention message to “do-it-yourselfers” who may be unintentionally engaged in various polluting activities during their home improvement projects. By having staff deliver the stormwater pollution prevention message, the program has the advantage of “the messenger” constantly being at the customers’ disposal, thereby being able to effectively reach and educate a large group of potential polluters.
- Attend Additional Community Events – Staffed a booth at the six (6) outreach events to target the “do-it-yourself” audience on how to prevent stormwater pollution.

School Outreach

The elementary school presentations have effectively resulted in Outcome Levels 1, 2, and 3 being achieved as a result of documented implementation, and a heightened sense of awareness and understanding. The MRWG partnered with local agencies, such as the Mojave Water Agency, Fort Irwin Biologists, Victorville City Library, Mojave Environmental Education Consortium, and Forever Wild Exotic Animal Sanctuary to fortify its educational outreach program. Presentations reached twelve (12)

elementary schools and 6,458 students, which took a pledge to be Stormwater Troopers and take pride in their community and take action to keep it pollution free. MRWG received more than 60 letters from students, reflecting on the presentations and how they are changing their behavior to prevent stormwater pollution. Sample letters are presented in Appendix E.

Media/Social Media Outreach

Outcome Levels 1 and 2 were attained with the Media/Social Media Outreach. The MRWG's Facebook and Twitter profile provided links to educational material that raised stormwater pollution awareness and offered tips and alternatives to reducing environmental impacts. The profiles also posted surveys and quizzes to engage site visitors to think about their behaviors and the importance of preserving local waterbodies. The results of these surveys and quizzes will serve as a baseline for future program effectiveness assessments.

MRWG Website

Outcome Levels 1 and 2 were attained with the MRWG website. Outreach materials distributed at community events, schools, and business partner locations all refer to the MRWG website for additional information to raise the public's awareness and understanding of stormwater pollution prevention measures and where to properly dispose of household hazardous waste. During this reporting period the redesigned website viewer activity increased in comparison to last year's figures. It received a total of 8,530 unique visitors, a 33% increase over last year's visitor count, and a total of 16,094 page views, a 43% increase.

Conclusion on Overall Public Education and Outreach Program Effectiveness

The Public Education and Outreach Program is deemed to be effective at various levels, Outcome Levels 1 (Documenting Activities), 2 (Raising Awareness), and 3 (Changing Behavior), for differing outreach efforts. The comprehensive Public Education and Outreach Program is effective and will continue to foster a greater sense of awareness and understanding among Mojave River Watershed homeowners and businesses with regard to stormwater pollution and the impacts associated with specific actions that impact our waterways. It is the goal of the MRWG that this heightened sense of awareness will translate into changing behaviors that result in reduced pollutant loads to the MS4 and receiving water body.

3.1.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

3.2 MCM 2 – Public Involvement and Participation

The public can often provide valuable input and assistance to the implementation of a stormwater program. Therefore, the public is given opportunities to play an active role in both the development and implementation of the Mojave River Watershed Program. An active and involved community is crucial to the success of a stormwater program because it allows for:

- Broader public support since citizens who participate in the development and decision making process are partially responsible for the program and, therefore, may be more likely to take an active role in its implementation;
- Shorter implementation schedules due to fewer obstacles in the form of public and legal challenges and increased sources in the form of citizen volunteers;
- A broader base of expertise and economic benefits since the community can be a valuable and free intellectual resource; and
- A conduit to other programs as citizens involved in the stormwater program provides important cross-connections and relationships with other community and government programs. This benefit is particularly valuable when trying to implement a stormwater program on a watershed basis.

3.2.1 Implementation Status

The MRWG successfully accomplished the objectives of MCM 2, Public Involvement and Participation. Program accomplishments included active participation with numerous organizations throughout the watershed to maximize the exposure of the stormwater message, hosting an Annual Public Workshop on November 10, 2010, to discuss implementation of the Mojave River Watershed stormwater program and solicit input from the public, and 21 litter clean up and recycling events.

Public Involvement and Stakeholder Participation

Water supply and water quality are issues that resonate with the High Desert community. The MRWG actively pursued opportunities involving the coordination of activities amongst themselves and with other area stakeholders with similar goals and agendas. The involvement of a diverse cross-section of people has been effective in terms of providing invaluable connections, further feedback, and information sources related to stormwater pollution prevention. Permittees continued to work collectively with stakeholders to preserve water quality in the High Desert. Permittees were active in participating with the following stakeholders during this reporting year:

- Mojave Water Agency Technical Advisory Committee Meetings – Permittees participated in meetings coordinated through Mojave Water Agency Technical Advisory Committee. This group is made up of water purveyors, farmers, property owners, and other community stakeholder groups in the High Desert.
- Alliance for Water Awareness and Conservation Meetings – Permittees participated in meetings with this regional water conservation group. The Alliance for Water Awareness and Conservation is an organization which actively provides water-related public information through workshops, publications, monthly newspaper articles, and displays.
- San Bernardino County Flood Control District, Zone 4 Meeting – Permittees participated in the Flood Control District, Zone 4 Advisory Committee Meeting, which is comprised of a wide cross-section of stakeholders groups, political, and community leaders in the High Desert community.

- Mojave River Watershed Group Meetings – Ten (10) meetings were held among the Permittees for this reporting year, which were made open to other stakeholders.

Annual Public Workshop

On November 10, 2010, the MRWG hosted the 6th Annual Public Workshop at the Spring Valley Lake Community Center in Victorville. Residents, business and building community members, industry representatives, and elected officials of San Bernardino County, the Town of Apple Valley and the Cities of Hesperia and Victorville were invited to participate in a workshop to present information on the Mojave River Watershed stormwater program and obtain input from the public. The main topics discussed at the workshop included an overview of the stormwater permit and management plan, required compliance practices, and a review of the seventh year annual report. A copy of the workshop flyer and sign-in sheet is included in Appendix A.

Litter Clean Up and Recycling Events

The Town of Apple organized two Community Clean Up Days that invited community service organizations, schools, clubs, and individual volunteers to participate in cleaning up designated areas of the Town. In this Town-wide effort to pick up litter, volunteers came together on October 23, 2010, and April 9, 2011, to dispose of mattresses, appliances, and furniture. General household trash, yard waste, and construction debris was taken to the Victorville landfill free of charge. Residents were successful in disposing of 14.56 tons at the October 23, 2010 event, and almost doubled the amount at the April 9, 2011 event, with a total of 26.87 tons of trash collected.

As part of its commitment to keeping the community clean, the City of Hesperia held the Bi-Annual Citywide Clean Up Day on October 23, 2010 in conjunction with the San Bernardino County Free Disposal and Recycling Day and Make a Difference Day. The Bi-Annual Citywide Clean Up Day brought together over 175 volunteers who helped clean the City and collect a total of 55.49 tons of waste. The second Bi-Annual Citywide Clean Up Day took place on April 9, 2011 and collected a total of 46.91 tons of waste. The City also held two (2) Tire Amnesty Days on October 23, 2010 and April 9, 2011, where residents were allowed to dispose of five (5) tires, free of charge, with proof of residency. Together, the Tire Amnesty Day events collected over 4.11 tons of tires.

The City of Victorville hosted four Shred-Fest events at the Victor Valley Materials Recovery Facility on August 7, 2010, November 6, 2010, February 5, 2011, and May 7, 2011. Residents were encouraged to drop off old televisions, computers, appliances, scrap metal, paper, plastic, glass, cardboard, newspaper, and confidential documents to shred for free. The Shred-Fest events resulted in the collection of 3.79, 3.70, 3.93, and 3.59 tons of material, respectively. The City of Victorville also hosted a Celebrate Earth Day event at the Materials Recovery Facility (MRF) on April 16, 2011. Victor Valley residents were encouraged to bring up to four 20-pound boxes of files to shred onsite which resulted in 2.95 tons of material collected. The event also included free "Mini Demos" on recycling, composting, environmental education, and recycled crafts.

The County of San Bernardino coordinated ten (10) Community Clean Up events throughout the unincorporated areas of the County. At these events, local residents, including all Phase II permittees, were allowed to fill a privately owned vehicle with trash, wood, furniture, mattresses, pallets, and other junk and dump it at a landfill free of charge. Together, the Community Clean Up events collected 80.6 tons of waste. Table 3-8 gives a detailed breakdown of the amount of waste collected during these events.

Table 3-8 San Bernardino County Community Clean Up Events Summary

Community Clean Up Event	Date(s)	Tons Collected
Arrowhead Farms Community Clean Up	June 4, 2011	32.4
Clean Desert/Bureau of Land Management Community Clean Up	November 13, 2010	0.8
El Mirage Community Clean Up	August 14-15, 2010	7.4
El Mirage Community Clean Up	February 19, 2011	14.5
Johnson Valley Community Clean Up	November 13, 2010	7.7
Johnson Valley Community Clean Up	April 16, 2011	2.2
Joshua Tree Clean Team Community Clean Up	October 16, 2010	2.1
Joshua Tree Clean Team Community Clean Up	April 30, 2011	9.6
Lucerne Valley Chamber of Commerce Community Clean Up	April 15-16, 2011	2.4
SBC Fire Station 57 Community Clean Up	September 18, 2010	1.5
	Total	80.6

3.2.2 Summary of BMPs

Public Involvement and Stakeholder Participation

The MRWG continued to work collectively with other area stakeholders to preserve water quality in the High Desert Region. Table 3-9 identifies the extent of involvement with each of the area stakeholders by attending regularly schedule meetings.

Table 3-9 Area Stakeholder Meetings Attended

Organization/Stakeholder	Meetings Attended			
	AV	H	V	SBC
Mojave Water Agency Technical Advisory Committee Meetings	0	7	4	6
Alliance for Water Awareness and Conservation Meetings	0	12	11	0
San Bernardino County Flood Control District, Zone 4 Meetings	3	3	3	3
Mojave River Watershed Permittee Meetings	10	10	9	10

Annual Public Workshop

Permittees successfully engaged the public during this workshop to obtain helpful input on how to further involve the public in the implementation of the stormwater management program and answer community questions related to established stormwater regulations and their impacts on local businesses.

Litter Clean Up and Recycling Events

The Town of Apple Valley and the Cities of Hesperia and Victorville each organized two large clean up events on October 23, 2010 and April 9, 2011. Permittees also hosted and promoted multiple recycling events targeting e-waste, newspapers, and green waste. The County of San Bernardino also hosted ten successful community clean up and recycling events.

3.2.3 Program Effectiveness

The overall effectiveness of MCM 2, Public Involvement and Participation, can be characterized as reaching Outcome Levels 1, 2, 3, and 4.

Public Involvement and Stakeholder Participation

Permittee involvement in the various stakeholder meetings has provided the MRWG with an opportunity to share information about the stormwater management efforts of the member agencies and foster relationships with other stakeholder participants to jointly spread information about stormwater pollution prevention and permit compliance. Through stakeholder workshops and other public outreach efforts, Permittees have been able to connect the stormwater pollution message with other efforts within the watershed. These collaborative efforts can be viewed as raising the awareness and understanding of citizens, area stakeholders, and community leaders to further disseminate the stormwater pollution prevention message.

Annual Public Workshop

Community involvement through the Annual Public Workshop can be viewed as being effective and achieving Outcome Levels 1 and 2. Permittees issued press releases and distributed flyers to announce the 6th Annual Public Workshop event. Members of the High Desert community, including businesses, builders, and MRWG agency officials participated in the workshop. It can be inferred that workshop participants gained a heightened sense of awareness and understanding as a result of actively participating in the workshop and providing input to the MRWG.

Litter Clean Up and Recycling Events

Outcome Levels 1, 2, 3, and 4 were achieved with the Litter and Clean Up and Recycling Events. High Desert community residents physically reduced the amount of waste from their neighborhoods which were potential stormwater pollutant sources.

3.2.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

3.3 MCM 3 – Illicit Discharge Detection and Elimination

The goal of the Illicit Discharge Detection and Elimination (IDDE) Program is to detect, respond to, investigate and eliminate illicit discharges and illicit connections, and conduct enforcement so that the discharge of pollutants to the storm drain system is prevented, controlled, and mitigated to the MEP. Illicit discharges can be attributed to illegal dumping and non-stormwater discharges originating from illegal connections to the MS4. These discharges can potentially contain pollutants that may impact receiving water quality. The baseline objectives of this program are:

- Incidental spills or disposal (including septic system failures, sanitary sewer leaks, or overflows) reported by the public and other agencies, or observed by Permittee field staff during the course of their normal daily activities will be investigated, contained, and cleaned up.
- Prohibited non-stormwater discharges to the storm drain system reported by the public and other agencies, or observed by Permittee field staff during the course of their normal daily activities will be eliminated through voluntary termination or enforcement action.
- Suspected prohibited non-stormwater discharges in the storm drain system reported by the public and other agencies, or observed by Permittee staff during the course of their normal daily activities, that may result from illicit connections or whose origin is unknown, will be investigated to determine the nature and source of the discharge and eliminated through voluntary termination or enforcement action.

3.3.1 Implementation Status

The objectives of MCM 3, Illicit Discharge Detection and Elimination, were reached in accordance with the SWMP. Program accomplishments included implementing an effective public education and outreach campaign to educate Mojave River Watershed residents about the impacts of illicit discharges and proper methods of household hazardous waste disposal, maintaining sufficient legal authority to enforce the goals of the IDDE program, conducting investigations of reported or observed illicit discharges, and following through with enforcement actions when appropriate.

Increase Public Awareness of IDDE

The MRWG was able to effectively increase public awareness of illicit discharges through the implementation of the Public Education and Outreach Program described in Section 3.1.1. The education and outreach activities conducted through MCM 1 included the distribution of educational brochures and other handouts that contained messages about the improper disposal of materials and non-stormwater discharges to the storm drain system. These educational materials also referenced the MRWG website, where citizens can report observed water pollution activities and retrieve additional information on pollution prevention practices. Educational materials also included the watershed's 1-800-CLEANUP hotline number for the general public to report spills and other discharges. Efforts conducted under MCM 2 also helped to spread the message about eliminating illicit discharges and illegal dumping.

IDDE Implementation and Procedures

The Mojave River Watershed can be characterized as a region with soils that rapidly infiltrate urban and stormwater runoff. In addition, the region's requirement for developed properties to retain stormwater runoff from a 100-year storm event prevents spills and other non-stormwater discharges from ever reaching the MS4. As a result of these typical conditions found throughout the watershed, a limited number of illicit discharges have been detected by the MRWG member agencies.

However, for those instances when an illicit discharge or connection is detected, the MRWG has developed effective policies and procedures to prevent and manage the discharge of pollutants to the storm drain system. These include a comprehensive public education and outreach program, field investigations, complaint responses, incident response and tracking, enforcement, and municipal staff training. Member agencies developed an Area-Wide Enforcement Response Guidance manual to assist in taking enforcement actions for stormwater quality deficiencies and violations. This manual has been adapted to supplement MRWG agency enforcement policies and may be modified at the discretion of each member agency in accordance with their internal practices, policies, and procedures.

Permittees respond, report, and monitor all identified illegal discharges and the County of San Bernardino continues to operate a 24-hour water pollution reporting hotline, 1-800-CLEANUP, and a website reporting system. The County also has an established partnership with "We Tip" to encourage citizens to turn in illegal dumpers by calling 1-800-78-CRIME. "We Tip" is a national nonprofit organization, staffing operators to take anonymous tips from all states within the United States, including Puerto Rico and the Virgin Islands. A \$25,000 reward program is setup to reward individuals that provide information leading to the arrest and conviction of illegal dumpers.

As a preventative measure, the public education and outreach program and MRWG website promote and encourage Mojave River Watershed residents to utilize the various household hazardous waste collection sites located throughout the watershed. The household hazardous waste collection program provides residents with a legal and cost-effective way to dispose of unwanted household chemicals that cannot be disposed with regular trash.

IDDE Legal Authority

The MRWG member agencies have adequate legal authority through existing municipal codes and ordinances to implement and enforce the IDDE Program and mitigate illicit discharges such as illegal dumping, recreational sewage, industrial/business connections, non-stormwater discharges, and sanitary sewer overflows.

3.3.2 Summary of BMPs

Increase Public Awareness of IDDE

A detailed summary of the BMPs implemented under MCM 1, Public Education and Outreach, and MCM 2, Public Involvement and Participation, are described in Sections 3.1.2 and 3.2.2, respectively. These educational activities included community event booths with displays conveying proper disposal of trash and household hazardous waste, outreach materials distributed at business locations which listed locations of household hazardous waste centers and encouraged proper disposal of potential pollutants, interactive school presentations on stormwater pollution and the impact that human actions have on the environment, and available resources on the MRWG website. Many of these educational activities incorporated a pointed message about illicit discharges and the impacts that they have on the environment.

IDDE Implementation and Procedures

Table 3-10 documents the number of illicit discharges reported and investigated by each MRWG member agency and the results of each recorded incident.

Table 3-10 Illicit Discharges Reported and Resolved				
Permittee	Illicit Discharges Reported	Illicit Discharges Resolved ¹	Resulted in Enforcement Action	Resolution Rate
Town of Apple Valley	0	0	0	---
City of Hesperia	141	138	90	98%
City of Victorville	587	464	26	79%
County of San Bernardino	3	3	1	100%

¹ Member agencies are unable to resolve all illicit discharges because at times the discharger is unknown and cannot be easily identified. For example, illegal dumping on a vacant lot.

The Mojave River Watershed has four (4) household hazardous waste collection centers, Table 3-11, and several automotive retail outlets for residents to properly dispose of their unwanted medications, paint, used motor oil, antifreeze, automotive batteries, lawn care products, drain cleaners, pool care products, and household cleaners.

Table 3-11 Household Hazardous Waste and Used Oil Collection Centers			
Name Location	City/Area	Days of Operation	Times Open
Apple Valley HHW-Public Works Yard 22411 S. Outer Highway 18	Apple Valley	1 st & 3 rd Saturday	10 am to 2 pm
City of Barstow Corporation Yard 900 South Avenue H	Barstow/ Unincorp. County	Saturdays	9 am to 2 pm
Hesperia Fire Station 17443 Lemon Street	Hesperia	Tuesday & Thursday Saturday	9 am to 1 pm 9 am to 3 pm
Victorville Fire Department East of Desert Knoll Dr. on Loves Ln.	Victorville	Wednesday & Sunday	9 am to 4 pm

IDDE Legal Authority

Permittees conducted a review of existing municipal codes and ordinances to confirm adequate legal authority to implement and enforce the requirements of the IDDE Program.

3.3.3 Program Effectiveness

The overall effectiveness of MCM 3, Illicit Discharge Detection and Elimination, was assessed at Outcome Levels 1, 2, 3, and 4.

Increase Public Awareness of IDDE

The MRWG was able to effectively increase the public's awareness and understanding of illicit discharges and their associated impacts to water quality through the implementation of various public education and outreach methods described in Sections 3.1.1, 3.2.1, and 3.3.1. The outreach efforts connected with the IDDE Program were determined to be at Outcome Levels 1, 2, 3, and 4. The Outcome Levels achieved for the public awareness component of the IDDE Program is confirmed through the documentation of outreach materials distributed to Mojave River Watershed residents and businesses, improved level of awareness as a result of one-on-one interactions during community events, and reduced loads as a result

of residents properly disposing their household hazardous waste at designated collection centers. In addition, the MRWG website and 1-800-CLEANUP and 1-800-78-CRIME hotlines supplemented the outreach materials distributed and assisted in raising public awareness while facilitating the public's ability to reduce pollutant loads by reporting illicit discharges and illegal dumping to the Permittees.

IDDE Implementation and Procedures

A limited number of illicit discharges have been detected by the MRWG member agencies. Due to the advantageous site conditions found throughout the watershed, where properties have onsite retention or detention facilities and dry wells, IDDE is more focused on illegal dumping and the occasionally observed or reported nuisance flow that makes it off a given property.

Program effectiveness Outcome Levels 1, 2, 3, and 4 have been attained through the implementation of the IDDE Program. MRWG member agencies have documented the number of suspected illicit discharge inspections conducted and resolved, the number of enforcement actions taken, established and maintained a hotline and website for reporting water pollution, identified problem areas with a storm drain map detailing the watershed's high risk threat zones, tracked the number of illegal discharge clean ups, and recorded the training of inspectors and responders, see Table 3-12. In addition, member agencies such as the County of San Bernardino have gone beyond the requirements of the Phase II Small MS4 General Permit to include the inspection of County unincorporated areas outside the permit boundary for the purpose of IDDE.

Table 3-12 Illicit Discharges Detection and Elimination Related Training	
Permittee	Personnel Trained
Town of Apple Valley	10
City of Hesperia ¹	5
City of Victorville	0
County of San Bernardino	159

¹ The City of Hesperia personnel also attend tailgate meetings every two weeks to discuss various issues when working with the sanitary sewer system.

Although a moderate number of illicit discharge complaints were received, it is understood that the MRWG effectively raised public awareness about illicit discharges and illegal dumping. Permittees assume that the low number of recorded complaints via the website and hotlines, and moderate numbers by residents and Permittee staff during the course of their normal daily activities are a result of post-construction BMPs infiltrating urban and stormwater runoff onsite prior to reaching the MS4.

A change in public behavior and source load reduction has been identified through the number of residents making use of the household hazardous waste and used oil collection centers. Over 506 tons of household hazardous waste was collected at these locations during Fiscal Year 2010-11. Table 3-13 documents the amount of materials collected and prevented from entering the MS4.

Table 3-13 Quantity of Materials Collected at Household Hazardous Waste and Used Oil Centers	
Household Hazardous Waste Collection Center Location	Quantity of Material Collected (Tons)
Town of Apple Valley	109
City of Hesperia	88
City of Victorville	124
Unincorporated County of San Bernardino	185
TOTAL	506

IDDE Legal Authority

Program effectiveness Outcome Level 1 was achieved for this measureable goal. Permittees conducted a review of existing municipal codes and ordinances to confirm adequate legal authority to implement and enforce the requirements of the IDDE Program.

3.3.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

3.4 MCM 4 – Construction Site Stormwater Runoff Control

The purpose of the Construction Site Stormwater Runoff Control Program is to reduce pollutants from construction activities that result in a land disturbance of greater than or equal to one acre.

The MRWG SWMP includes the development and implementation of program elements to:

- Ensure adequate legal authority to require erosion and sediment controls on construction sites;
- Review project plans to confirm the incorporation of temporary BMPs to address potential water quality impacts during construction;
- Require construction site operators to implement appropriate erosion and sediment control BMPs;
- Require construction site operators to manage construction wastes to prevent adverse impacts to water quality; and
- Conduct construction site inspections and enforce the application of control measures to effectively reduce the transport of pollutants from the construction site to the storm drain system.

3.4.1 Implementation Status

Objectives for MCM 4, Construction Site Stormwater Runoff Control Program, were accomplished by the Permittees through the implementation of construction site inspections, monitoring, and enforcement consistent with the effectiveness metrics developed in year one of the program. Actions taken by Permittees to implement the Construction Site Stormwater Runoff Control Program included reviewing construction plans and issuing grading permits consistent with local requirements and ordinances, conducting routine and follow up inspections of construction sites to ensure proper implementation and maintenance of BMPs and compliance with local requirements, proceeding with enforcement actions for sites in violation of local requirements, providing regular training and outreach for municipal inspectors and construction staff and contractors, and maintaining a tracking system of construction sites.

Construction Site Inspections and Monitoring

Permittees made periodic site inspections during the course of a construction project to ensure compliance with codes and ordinances. Permittee inspectors verified at project commencement the proper installation and maintenance of BMP control measures and throughout the multiple construction phases of the project. Supplemental inspections were performed by the Permittees in response to complaints received from citizens and referrals from other internal departments or intergovernmental enforcement agencies on issues related to stormwater quality.

Correction and Enforcement Actions

In Fiscal Year 2010-11, Permittees did not issue Notices of Correction on any construction projects. Permittees observed adequate and/or proper selection and maintenance of BMPs, proper storage of materials outdoors, installation of proper secondary containment to capture spills that may occur, outdoor washing with containment of wash water, proper covering of stock piles, and prompt BMP maintenance. MRWG Permittee inspectors have developed good working relationships with construction site operators to quickly address areas of concern without having to resort to more extreme measures such as enforcement actions or referral to the Lahontan RWQCB.

Member agencies utilized an Area-Wide Enforcement Response Guidance manual to assist in taking enforcement actions for stormwater quality deficiencies and violations. This manual has not been formally adopted by the MRWG agencies and may be modified at the discretion of each member agency in accordance with their internal practices, policies, and procedures.

3.4.2 Summary of BMPs

Construction Site Inspections and Monitoring

Table 3-14 shows the number of construction sites issued a grading permit and the relative sizes of these construction projects.

Table 3-14 Number of Grading Permits Issued and Project Sizes			
Permittee	Grading Permits Issued	Construction Projects > 1 Acre	Construction Projects < 1 Acre
Town of Apple Valley	6	3	3
City of Hesperia	10	3	7
City of Victorville	211	7	204
County of San Bernardino	8	2	6

Table 3-15 illustrates the number of construction site inspections performed by each Permittee in compliance with MCM 4, Construction Site Stormwater Runoff Control Program.

Table 3-15 Number of Construction Site Inspections	
Permittee	Number of Inspections
Town of Apple Valley	7
City of Hesperia	34
City of Victorville ¹	7
County of San Bernardino ²	2

¹ The economic downturn severely impacted development in the Victor Valley and as a result little activity occurred at construction projects greater than an acre resulting in fewer inspections.

² Two (2) inspections were necessary within the Permit boundary. However, eighteen (18) inspections and six (6) follow-up inspections were performed outside the permit boundary in the Unincorporated County areas that fall within the Lahontan Regional Water Quality Control Board jurisdiction.

It is important to train inspectors and other municipal staff to perform comprehensive inspections of construction sites to ensure that construction activities do not result in adverse impacts to water quality. It is equally important to train local contractors, builders, and developers on the proper installation and maintenance of BMPs to eliminate non-stormwater discharges and reduce the impacts of erosion and sediment with site appropriate controls. Four QSD and QSP Training and Exam Preparation Sessions were made available to County personnel. Training was organized by the County of San Bernardino for City, County, State, and private companies and covered the Construction General Permit adopted on September 2, 2009. The City of Hesperia also hosted a QSD and QSP Training and Exam Preparation Session and was made available to any interested individual. On April 14, 2011, City, Town, and County personnel also attended a CESSWI review course and exam organized by the County of San Bernardino. Table 3-16 highlights the number of municipal staff who received training in Fiscal Year 2010-11 and construction site operator training sessions made available.

Table 3-16 Construction Site Stormwater Runoff Control Training

Permittee	Municipal Staff Trained	Construction Site Operator Trainings Made Available
Town of Apple Valley	10	0
City of Hesperia	9	0
City of Victorville	4	0
County of San Bernardino	126	4

Correction and Enforcement Actions

No Notices of Correction were issued. Table 3-17 summarizes the number of Notices of Correction issued and the number of projects requiring enforcement action as a result of non-compliance.

Table 3-17 Notices of Correction and Enforcement Actions

Permittee	Notices of Correction	Enforcement Actions
Town of Apple Valley	0	0
City of Hesperia	0	0
City of Victorville	0	0
County of San Bernardino ¹	0	0

¹ Six (6) Notices of Correction were issued for projects outside the Permit boundary and zero (0) enforcement actions resulted in referrals to the Lahontan Regional Water Quality Control Board.

3.4.3 Program Effectiveness

Program effectiveness for MCM 4, Construction Site Stormwater Runoff Control, was assessed at Outcome Levels 1, 2, 3, and 4.

Construction Site Inspections and Monitoring

A large portion of the construction program is typically focused on site inspections that can serve as the basis for establishing baselines regarding how the sites are operating, what pollutants are of concern, and the level of BMP implementation and maintenance. In turn, follow-up inspections can be used to track changes and ensure that the sites are properly implementing and maintaining their BMPs.

MRWG Permittees have effectively achieved Outcome Levels 1, 2, and 3. Construction programs have documented and maintained adequate legal authority to enforce the Construction Site Stormwater Runoff Control Program, tracked the number of grading permits issued and construction sites inspected, and maintained records of training sessions attended by municipal staff and construction site operators. These training sessions have raised the awareness and understanding of impacts associated with construction site activities on the receiving water body and routine inspections have also served to reinforce the level of awareness necessary to install and maintain appropriate BMPs at construction sites. A change in behavior is inferred due to the number of construction sites complying with the Construction General Permit requirements and adequately implementing and maintaining BMPs to reduce and control erosion, sediment, and non-stormwater discharges from construction sites. In addition, up front reviews of project specific SWPPPs provide plan checkers with an opportunity to communicate with construction site operators to raise their level of awareness with regards to the proper installation and maintenance of stormwater BMPs.

Correction and Enforcement Actions

Permittees have effectively achieved Outcome Levels 1, 2, 3, and 4 for the Construction Site Stormwater Runoff Control Program. Permittees have previously documented adequate enforcement policies and mechanisms to issue Notices of Correction and Enforcement Actions to influence a change in behavior at deficient construction sites. By recording the number of Notices of Correction and Enforcement Actions taken over the last Fiscal Year, Permittees have effectively documented their activities to achieve Level 1 status. By working closely with construction site operators to correct BMP shortcomings, Permittees have been able to increase the level of awareness amongst these problematic construction site owners and operators, and to change behaviors in the field. These changes in behavior ultimately result in the proper implementation of effective BMPs to reduce pollutant loads to the receiving water body.

3.4.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

3.5 MCM 5 – Post-Construction Stormwater Management in New Development and Redevelopment

The purpose of the Post-Construction Stormwater Management in New Development and Redevelopment Program is to minimize potential adverse impacts to water quality from development projects by incorporating site planning, post-construction controls (site design, source control, and treatment control BMPs), and long-term maintenance agreements.

The goal of this Program is to assure that appropriate post-construction BMPs are included in New Development and Redevelopment project plans to minimize impacts from urban and stormwater runoff on the receiving water body. Permittees currently have a system in place to address urban and stormwater runoff by using post-construction BMPs such as retention and detention basins incorporated into the project site. These devices function to control stormwater volume and improve water quality by settling out particulates and other pollutants of concern.

3.5.1 Implementation Status

Objectives for MCM 5, Post-Construction Stormwater Management in New Development and Redevelopment, were to implement post-construction BMPs and revise ordinances and policies as necessary. Permittees successfully accomplished these goals by requiring project proponents to submit engineering and grading plans which incorporated structural and non-structural BMPs appropriate for the High Desert communities, contracting with qualified consultants to provide professional services to review plans, inspecting BMP installation, ensuring compliance with the post-construction program, and assessing ordinances and policies to verify adequate legal authority and guidelines to achieve the requirements of the Phase II Small MS4 General Permit.

Post-Construction Stormwater Management Implementation

Permittees are conditioning new development and redevelopment projects to submit engineering and grading plans which incorporate post-construction controls (site design, source control, and treatment control BMPs) and long-term maintenance agreements to mitigate urban and stormwater runoff after a developer has completed a project. MRWG member agencies are using discretionary approval and placing conditions on developments to require the incorporation of post-construction BMP controls. In addition, flood damage prevention ordinances that place requirements on new construction also help with conditioning projects to mitigate post-development urban and stormwater runoff. These ordinances seek to limit peak discharges from new developments by retaining and infiltrating stormwater onsite. These devices function to control stormwater volume and improve water quality by settling out particulates and other pollutants of concern.

To improve awareness of the post-construction requirements and how to effectively implement them in the High Desert, Permittees attended various training sessions and workshops including the QSD/QSP Training Sessions, New Construction General Permit training course, CESSWI review course and exam, and other internal member agency training sessions.

Water Quality Management Plan and Post-Construction BMP Guidance Manual

MRWG Permittees developed a WQMP and Post-Construction BMP Guidance Manual to assist project applicants with the design and preparation of engineering plans to incorporate effective post-construction BMPs to treat and infiltrate stormwater runoff from discretionary projects. At their discretion, each member agency may modify the model guidance manual in accordance with their internal practices, policies, and procedures. A copy of the MRWG Post-Construction BMP Guide is provided in Appendix F.

Ordinance and Policy Revisions

Permittees have adequate legal authority through existing municipal codes and ordinances to implement and enforce the Post-Construction Stormwater Management in New Development and Redevelopment Program. Previous ordinances were enacted to promote water conservation which also prevents excessive discharges of nuisance water. A Countywide Landscaping Ordinance incorporating post-construction LID principles was adopted on February 8, 2011 in an attempt to prepare for the area's growing water needs.

3.5.2 Summary of BMPs

Post-Construction Stormwater Management Implementation

Table 3-18 shows the number of projects meeting the threshold for post-construction BMP requirements and implementing control measures.

Table 3-18 Number of Projects Implementing Post-Construction BMPs	
Permittee	Number of Projects
Town of Apple Valley	13
City of Hesperia	Unknown ¹
City of Victorville	1
County of San Bernardino	9

¹ The City of Hesperia does not have a tracking mechanism for quantifying all sites implementing post-construction BMPs other than for dry wells located east of Hesperia Road and horizontal underground retentions systems citywide. It is currently estimated that 57 dry well systems have been implemented as Post-Construction BMPs and 46 sites are utilizing horizontal underground retention systems.

Table 3-19 provides the number of Permittee staff trained on the implementation of post-construction BMPs and LID strategies.

Table 3-19 Number of Personnel Trained on Post-Construction BMP Implementation	
Permittee/Private Industry	Personnel Trained
Town of Apple Valley	0
City of Hesperia	8
City of Victorville	0
County of San Bernardino	69

Water Quality Management Plan and Post-Construction BMP Guidance Manual

The following provides an outline of the WQMP and Post-Construction BMP Guidance Manual that was finalized by the MRWG member agencies:

1. Water Quality, A Nation, State, and Local Concern
2. Requirements for Development Projects
3. Best Management Practices
4. Low Impact Development - Future Home
5. Integration of BMPs into Development Projects
6. Source Control BMPs
7. Site Design BMPs
8. Treatment Control BMPs
9. Water Quality Design Volume and Water Quality Design Flow
10. BMP Fact Sheets

11. Site Evaluation and Testing Protocols – Stormwater Infiltration BMPs
12. Class V Injection Wells and Groundwater Protection Requirements
13. Suitable Plants for Use in BMPs - Future Home
14. WQMP Template

Ordinance and Policy Revisions

Permittees reviewed the existing municipal codes and ordinances used to implement and enforce the Post-Construction Stormwater Management in New Development and Redevelopment Program, and confirm adequate legal authority to implement and enforce the Phase II Small MS4 General Permit requirements.

3.5.3 Program Effectiveness

Overall, the assessed program effectiveness for MCM 5, Post-Construction Stormwater Management in New Development and Redevelopment, was at Outcome Levels 1, 2, 3, and 4.

Post-Construction Stormwater Management Implementation

Implementation of MCM 5, Post-Construction Stormwater Management in New Development and Redevelopment, has been assessed at Outcome Levels 1, 2, 3, and 4. Permittees have documented the appropriate legal authority to enforce the requirements of this MCM and noted the number of projects conditioned for the incorporation of post-construction BMPs. Permittee staff has actively participated in various trainings and workshops to understand how to successfully implement and enforce the post-construction BMP requirements of this program. This training has resulted in a better understanding of post-construction BMP and LID options, and the MCM 5 requirements. The number of construction projects disturbing more than one (1) acre of land was less than fifty percent of the previous Fiscal Year, however the number of projects implementing Post-Construction BMPs increased by fifty percent. This shows that the MRWG Post-Construction BMP Guide, finalized in September 2010, served as an effective tool to assist developers to successfully control the discharge of pollutants associated with new development and redevelopment. The Post-Construction Stormwater Management in New Development and Redevelopment Program demonstrated an effective change in behavior from the way developers constructed projects to now incorporating post-construction BMPs. Although pollutant load reduction quantities, as a result of post-construction BMPs installed on project sites, have not been assessed it can be concluded that these BMPs are making a positive impact in reducing pollutant loads to the storm drain system.

Water Quality Management Plan and Post-Construction BMP Guidance Manual

The effectiveness of developing a WQMP and Post-Construction BMP Guidance Manual is determined to be at Outcome Levels 1, 2, and 3. A formal guidance manual, serves to clearly document the purpose and requirements of the Post-Construction Stormwater Management in New Development and Redevelopment Program. Developers referring to the manual have a raised awareness of source control, site design, and treatment control BMPs and LID strategies, and the specific pollutants of concern that each practice targets. The guidance manual also results in a behavioral change since it provides project engineers with support on the proper selection of post-construction BMPs for discretionary projects that ultimately result in a reduction of runoff discharged and pollutant loads to the receiving water body.

Ordinance and Policy Revisions

Program effectiveness Outcome Level 1 was achieved for this goal. Permittees conducted a review of existing municipal codes and ordinances to confirm adequate legal authority to implement and enforce the requirements of the Post-Construction Stormwater Management in New Development and Redevelopment Program.

3.5.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

3.6 MCM 6 – Pollution Prevention and Good Housekeeping for Municipal Operations

Municipalities conduct various activities that can generate or mobilize pollutants in stormwater runoff. The purpose of the Pollution Prevention and Good Housekeeping for Municipal Operations Program is to reduce pollutants from these operations and maintenance activities (e.g. small construction improvement projects, street sweeping, storm drain cleaning, corporation yard operation, etc.) through the development and implementation of good housekeeping, BMPs, and activity specific stormwater pollution prevention training.

Pollution prevention and good housekeeping practices are critical to maintaining progress and achieving continued improvement in water quality. Permittees have developed a pollution prevention and good housekeeping program that requires employees to examine and subsequently alter their actions to reduce the type and amount of pollution. Recognizing the benefits of pollution prevention practices, the MRWG has developed this program based on the following goals:

- Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations into the storm drain system;
- Integrate pollution prevention and good housekeeping practices training into municipal employee training programs; and
- Implement the appropriate BMPs to mitigate urban and stormwater runoff pollution.

3.6.1 Implementation Status

Program accomplishments included training municipal operations personnel on pollution prevention techniques and good housekeeping practices, implementing post-construction BMPs at municipal facilities to reduce the discharge of pollutants to the MEP, and incorporating pollution prevention practices into daily work routines.

Municipal Operations Personnel Training

Permittees conducted comprehensive training of municipal operations personnel to identify pollution prevention practices that can be incorporated into daily work routines and good housekeeping tips. Training materials covered ways to reduce pollutants from operation and maintenance activities such as small construction improvement projects, street sweeping, storm drain cleaning, and corporate yard operations through the development and implementation of control measures and BMPs. Training materials used met the requirements of the permit and provided municipal staff with adequate training to perform their duties in a manner that reduces the potential to discharge pollutants of concern to the storm drain system.

Training materials used included Microsoft PowerPoint presentations, videos, modules, BMP manuals, brochures, booklets, and in the field hands on training. Training programs provided to municipal operations staff covered the following topics:

- BMPs for the daily duties of a municipal employee
- Pollution prevention
- Good housekeeping
- Stormwater compliance rules and regulations
- Spill prevention
- Spill reporting and response procedures

- Sewer system overflow response
- Outdoor storage of materials and waste
- Vehicle and equipment maintenance
- Vehicle and equipment washing
- Street maintenance
- Landscaping

Municipal Facility BMP Implementation and Inspection

MRWG member agencies utilize good housekeeping practices and source control BMPs to prevent and minimize pollution from municipal facilities. Each agency routinely inspects their respective municipal yard to ensure that good housekeeping practices are implemented and BMPs are maintained.

3.6.2 Summary of BMPs

Municipal Operations Personnel Training

Table 3-20 briefly summarizes the number of municipal operations staff trained in Fiscal Year 2010-11.

Table 3-20 Number of Staff Trained for Municipal Operations	
Permittee	Number of Staff Trained
Town of Apple Valley	10
City of Hesperia	68
City of Victorville	0
County of San Bernardino	159

Municipal Facility BMP Implementation and Inspection

The County of San Bernardino continues to maintain the site specific SWPPPs for 12 Municipal Road Yard Facilities that were developed last Fiscal Year, 2009-10. The SWPPPs are maintained to ensure that they identify source control and post-construction BMPs to prevent and minimize dry- and wet-weather pollution. The SWPPPs were reviewed to ensure that the installed BMPs include catch basin curb inlet screens, curb inlets with oil absorbent geotextile booms, storm drain drop inlet inserts with oil absorbent filters, and spill absorbent kits near fueling areas for responding to small incidental spills. In Fiscal Year 2010-11, the County provided operations personnel with annual training and yard personnel and stormwater program inspectors conducted quarterly and annual inspections to minimize pollution at each Municipal Road Yard Facility.

3.6.3 Program Effectiveness

Effectiveness Outcome Levels 1, 2, and 3 were measured for MCM 6, Pollution Prevention and Good Housekeeping for Municipal Operations.

Municipal Operations Personnel Training

Documented municipal training programs were determined to increase the knowledge of municipal staff. As a result municipal staff used good judgment and appropriate housekeeping measures while performing municipal operations. This higher level of comprehension and change in behavior by municipal operations staff facilitated the use of site appropriate BMPs and pollution prevention techniques to minimize impacts to receiving water quality.

Municipal Facility BMP Implementation and Inspection

The quarterly and annual inspection of municipal facilities provides for the documentation of activities performed by the MRWG member agencies and ensures that municipal operations staff is trained and aware to implement good housekeeping practices and perform the proper operation and maintenance of source control and post-construction BMPs to prevent and minimize pollution. The implementation of good housekeeping measures, and source control and post-construction BMPs also serves as a change in behavior to lead towards a reduction in pollutant loads.

3.6.4 Proposed Program Modifications

The MRWG does not propose any program modifications at this time.

4.0 Goals and Activities Planned for Fiscal Year 2011-12

Since the Phase II Small MS4 General Permit has not been renewed, the MRWG member agencies have not established any new measureable goals. Member agencies will continue to implement their SWMP and MCMs to reduce the discharge of pollutants from the MS4 to the MEP to protect water quality.

5.0 Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Town of Apple Valley

_____ Signature of Permittee (legally responsible representative)	_____ Date signed
_____ Brad Miller, P.E. Name (Please print)	_____ Town Engineer Title

City of Hesperia

_____ Signature of Permittee (legally responsible representative)	_____ Date signed
_____ John Leveillee, P.E. Name (Please print)	_____ City Engineer Title

City of Victorville

_____ Signature of Permittee (legally responsible representative)	_____ Date signed
_____ John A. McGlade, P.E. Name (Please print)	_____ City Engineer Title

County of San Bernardino

_____ Signature of Permittee (legally responsible representative)	_____ Date signed
_____ Granville M. "Bow" Bowman, P.E., P.L.S. Name (Please print)	_____ Director Title

6.0 MRWG Member Agency Contact Information

The following is contact information for each of the MRWG Member Agencies:

Town of Apple Valley

14955 Dale Evans Parkway
Apple Valley, CA 92307

Contact Person: Mike Smith
Contact Phone No.: (310) 257-2010

City of Hesperia

9700 Seventh Avenue
Hesperia, CA 92345

Contact Person: Tina Souza
Contact Phone No.: (760) 947-1474

City of Victorville

14343 Civic Drive
Victorville, CA 92393-5001

Contact Person: Helen Wilson
Contact Phone No.: (760) 955-5158

County of San Bernardino

825 E. Third Street
Second Floor, Room 201
San Bernardino, CA 92415-0835

Contact Person: Nancy Sansonetti
Contact Phone No.: (909) 387-1866

APPENDIX A

Annual Public Workshop Flyer and Sign-In Sheet



Join Us!

Annual Public Workshop

When:

Wednesday, November 10

Presentation: 6:00 - 6:45 p.m.

Questions: 6:45 - 8:00 p.m.

Where:

**Spring Valley Lake
Community Center**

12975 Rolling Ridge Drive
Victorville, California

Win Prizes!

\$50 Lowe's Gift Card

All attendees will receive a free raffle ticket for a chance to win.

Who is Invited to Attend:

- Residents
- Elected Officials
- Industry Representatives

Workshop Benefits – Review:

- Stormwater permit and Management Plan
- Water Quality Successes
- Compliance Practices
- Annual Report

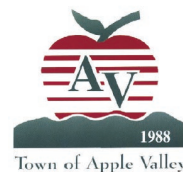
Location Map:



For more information call:

Dan Ilkay, (909) 387-8119

www.mojaveriver.org



Mojave River Watershed Group

Annual Public Workshop Sign-In Sheet

Wednesday, November 10, 2010 from 6-8 p.m.

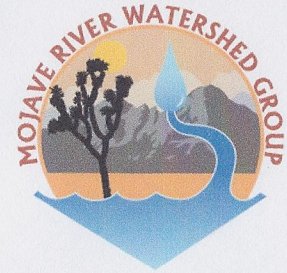


Name/Organization	Address	Phone	Email
CARL COLEMAN	19531 Hwy 18 Av.	760-242-9900	ALTECENG6@AOL.COM
JENNY WILDER	19607 SANDY LN AV. 92308	760-220-0730	JENSOASIS@AOL.COM
DON SEDAM	9269 SVL BOX 18007 MARINER	760-955-6052	DESEBOM@AOL.COM
Wm. K. Herold	7934 SVL Box	760-243-6242	billherold@aol.com
MIKE SMITH	APPLE VALLEY	310-809-8182	MIKESMITH@CAAPROFESSIONALS.COM
GARRY MELUSKI	P.O. BOX 2210 WRIGHTWOOD	760-249-4902	GMELUSKI@WJMCKEEVERINC.COM
Larry Hoover	8794 SVL Box	760-881-3087	elene/crat@gmail.com
Garry J. Meluski	14612 King Canyon Rd	760-245-0883	Garrymeluski@yahoo.com
Barbara Dew	PO BOX 711 Victorville, CA	760 243-3350	

Mojave River Watershed Group

Annual Public Workshop Sign-In Sheet

Wednesday, November 10, 2010 from 6-8 p.m.



Name/Organization	Address	Phone	Email
Mike Crisi	3141 LIGHT HOUSE RIDGE	619 300-1734	ARCENGINEERING1@VERIZON.NET
GINGER COLEMAN	19531 Hwy 18, AV 92307	760 242-9900	GINGERCOLEMAN@AOL.COM
RANDY COLEMAN	" "	" "	RANDYACIP@AOL.COM
DENNIS VERHAGEN	13970 Spring Valley Hwy	760 243-2121	DENNISVERHAGEN@FANTHUNG.NET
Nicholas DeGuscio	13300 Palos Grande Dr	760 2437449	PALOSGRANDE@VERIZON.NET
Helen Wilson	17848 Riverview Rd	(760) ²⁴³⁻ 95 3731	hwilson@ci.victorville,ca.us
Scott R. Wilson	17848 Riverview Rd	(760) 559-0313	same
John Breckenridge	19331 Shamrock AV	760 666 9519	mdt@jtb@gmail.com
Ryan Orr	Cocoy Rd 18608 Apple Valley AV	760-948-9849	rorr@wwra.com
Alli Likay	P25 - # Third, SB, CA	909-387-8119	dilikay@dpu.sbcounty.gov
Linda Meluski	P.O. Box 2210	951-316-3385	LindaMeluski@yahoo.com

APPENDIX B
Meeting Sign-In Sheets



SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT ZONE 4 ADVISORY COMMITTEE BUDGET HEARING MEETING RECORD OF ATTENDANCE



Date: May 4, 2010 - City of Victorville - Conference Rm. D

COMMITTEE MEMBERS:	Initials	MAYORS/Alternates:	Initials	CITY ENGINEERS:	Initials
Louis Chavez	LC	City of Adelanto Mayor Charley B. Glasper	[Signature]	City of Adelanto Wilson So	[Signature]
		Town of Apple Valley Scott Nassif	[Signature]	Town of Apple Valley Brad Miller	
		City of Barstow Joe Gomez		City of Barstow Nick Nicholas	
		City of Hesperia Ed Pack		City of Hesperia John Leveillee	
		City of Victorville Rudy Cabriaes	[Signature]	City of Victorville Sean McGlade	
F.C.D. STAFF:	Initials	BOARD OF DIRECTORS	Initials	OTHERS: Name / Organization	Initials
Granville "Bow" Bowman	✓	Brad Mitzelfelt First District Supervisor		City of Hesperia Scott Priester	
Kevin Blakeslee	KB	Robert Eland First District Representative		City of Hesperia Mike Podegracz	
Melissa Walker	✓			City of Victorville Joe Flores	
Naresh Varma	✓			Town of Apple Valley Richard Pederson	
Harold Zamora	[Signature]			Lewis Center Rick Piercy	
Jon Smith	[Signature]				
David Lovell	[Signature]				
Mervat Mikhail	[Signature]				
Michele Derry	✓				
Barbara Sheppard	✓				



SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT ZONE 4 ADVISORY COMMITTEE BUDGET HEARING MEETING RECORD OF ATTENDANCE



Date: May 4, 2010 - City of Victorville - Conference Rm. D

COMMITTEE MEMBERS:	Initials	MAYORS/Alternates:	Initials	CITY ENGINEERS:	Initials
Louis Chavez		City of Adelanto Mayor Charley B. Glasper		City of Adelanto Wilson So	WSS
		Town of Apple Valley Scott Nassif		Town of Apple Valley Brad Miller	BSM
		City of Barstow Joe Gomez		City of Barstow Nick Nicholas	
		City of Hesperia Ed Pack		City of Hesperia John Leveillee	JL
		City of Victorville Rudy Cabriaes		City of Victorville Sean McGlade	
F.C.D. STAFF:	Initials	BOARD OF DIRECTORS	Initials	OTHERS: Name / Organization	Initials
Granville "Bow" Bowman	B	Brad Mitzelfelt First District Supervisor		City of Hesperia Scott Priester	
Kevin Blakeslee		Robert Eland First District Representative		City of Hesperia Mike Podegracz	
Melissa Walker				City of Victorville Joe Flores <i>Louis Podesgracz</i>	C
Naresh Varma	NV			Town of Apple Valley Richard Pederson	
Harold Zamora				Lewis Center Rick Piercy	
Jon Smith				Zone 2 F.C. Commissioner (Montrose) Bill Flores	
David Lovell				Brian Gengler, Victorville	
Mervat Mikhail				NICK Nichols Barstow	or
Michele Derry					
Barbara Sheppard					



**SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
ZONE 4 ADVISORY COMMITTEE SEMI-ANNUAL MEETING
RECORD OF ATTENDANCE**



Date: October 20, 2010 - City of Victorville - Conference Rm. D

COMMITTEE MEMBERS:	Initials	MAYORS/Alternates:	Initials	CITY ENGINEERS:	Initials
Louis Chavez	LC	City of Adelanto Mayor Charley B. Glasper		City of Adelanto Wilson So	
Kimberly Cox	KC	Town of Apple Valley Scott Nassif		Town of Apple Valley Brad Miller	BM
Jon D. Sabo	JS	City of Barstow Joe Gomez		City of Barstow Nick Nichols	NN
		City of Hesperia Ed Pack	EP	City of Hesperia John Leveillee	JL
		City of Victorville Rudy Cabriaes	RC	City of Victorville Sean McGlade	
F.C.D. STAFF:	Initials	BOARD OF DIRECTORS	Initials	OTHERS: Name / Organization	Initials
Kevin Blakeslee	KB	Brad Mitzelfelt First District Supervisor		City of Hesperia Scott Priester	
Melissa Walker	MW	Robert Eland, District Dir. First District		City of Hesperia Mike Podegracz	
Naresh Varma				City of Victorville Joe Flores	
Harold Zamora	HZ			Town of Apple Valley Richard Pederson	
Jon Smith	JS			Lewis Center Rick Piercy	
David Lovell				Victorville Brian Genaler	✓
Mervat Mikhail	MM			CITY OF VICTORVILLE DOUG MATTHEWS	DM
Barbara Sheppard	BS				



**SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
ZONE 4 ADVISORY COMMITTEE BUDGET HEARING MEETING
RECORD OF ATTENDANCE**



Date: May 10, 2011 - City of Victorville - Conference Rm. D

COMMITTEE MEMBERS:	Initials	MAYORS/Alternates:	Initials	CITY ENGINEERS:	Initials
Louis Chavez	LC	City of Adelanto Mayor Cari Thomas		City of Adelanto Wilson So	
Jon Sabo	✓	Town of Apple Valley Scott Nassif	✓	Town of Apple Valley Brad Miller	
Kimberly Cox	✓	City of Barstow Joe Gomez		City of Barstow Nick Nichols	
Bill Jensen	✓	City of Hesperia Bill Holland	✓	City of Hesperia John Leveillee	
		City of Victorville Ryan McEachron		City of Victorville Sean McGlade	
F.C.D. STAFF:	Initials	BOARD OF SUPERVISORS	Initials	OTHERS: Name / Organization	Initials
Kevin Blakeslee	✓	Brad Mitzelfelt First District Supervisor		City of Hesperia Scott Priester	
Melissa Walker	MW	Robert Eland First District Representative		City of Hesperia Mike Podegracz	
Erwin Fogerson	✓			City of Victorville Joe Flores	
Harold Zamora	HZ			Town of Apple Valley Richard Pedersen	
Bea Valdez	✓			Lewis Center Rick Piercy	✓
Jon Smith				CARL COLEMAN	
John Schatz	✓			RANDY COLEMAN	
Hany Peters	HP				
Mervat Mikhail					
Rhonda Neill					
Barbara Sheppard	BS				



**SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
ZONE 4 ADVISORY COMMITTEE BUDGET HEARING MEETING
RECORD OF ATTENDANCE**



Date: May 10, 2011 - City of Victorville - Conference Rm. D

COMMITTEE MEMBERS:	Initials	MAYORS/Alternates:	Initials	CITY ENGINEERS:	Initials
Louis Chavez		City of Adelanto Mayor Cari Thomas		City of Adelanto Wilson So	WFS
Jon Sabo	<i>JS</i>	Town of Apple Valley Scott Nassif		Town of Apple Valley Brad Miller	BM
Kimberly Cox	<i>KC</i>	City of Barstow Joe Gomez		City of Barstow Nick Nichols	
Bill Jensen	<i>WJ</i>	City of Hesperia Bill Holland	<i>BH</i>	City of Hesperia John Leveillee	<i>JL</i>
		City of Victorville Ryan McEachron	<i>RM</i>	City of Victorville Sean McGlade	
F.C.D. STAFF:	Initials	BOARD OF SUPERVISORS	Initials	OTHERS: Name / Organization	Initials
Kevin Blakeslee		Brad Mitzelfelt First District Supervisor		City of Hesperia Scott Priester	
Melissa Walker		Robert Eland First District Representative		City of Hesperia Mike Podegracz	
Erwin Fogerson	<i>ERF</i>			City of Victorville Joe Flores	
Harold Zamora				Town of Apple Valley Richard Pedersen	<i>RP</i>
Bea Valdez	<i>BV</i>			Lewis Center Rick Piercy	
Jon Smith				Brian Gengler City of Victorville	<i>BS</i>
John Schatz				Mary Stock - CAL FIRE	<i>MS</i>
Hany Peters	<i>HP</i>			Nancy Sansonetti, SBCO Stormwater section	<i>NS</i>
Mervat Mikhail					
Rhonda Neill					
Barbara Sheppard					

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

OCTOBER 6, 2010
10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
MARINA WEST	BDUWA		
Terry Burkhardt	BDUWA		
Shirley Baren	AVHCLWD		
Norman Daniels	ESTE		
George Cardenas	PPHCSO		
Tom Thornton	HESPERIA		
Jim M... ..	MIRCWD		
LINDA DELUCA	NEWBERRY SPRINGS		
WAYNE L. SNIVELY	NEWBERRY SPRINGS Newberry Springs		WAYNES_PE_63 @YAHOO.COM
STEVEN WHITMAN	TBCWD		
RICH ALLEN	COUNTY CSA'S 64&70J		RALLEN@SDD.SBCOUNTY.GOV

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

AUGUST 4, 2010
10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
JARED BEYELER	COUNTY OF SAN BERNARDINO		
Terry Burkhead	BDOVA		
J. LITVAK	BDOVA		
RICH ALLEN	CSA CH # 70 J		
WAYNE L. SMITH	NB-CSD-	47323 AUTUMN LEAF RD NBS 92365	
LINDA DELUCA	NBS	P.O. BOX 82 NBS, CA 92365	
Ed Muzik	HIDWD		
RICHARD SELBY	ESTE		
JW MENDOZA	MRCWD		
R. HERR	MWA		
LOISAN OLDS	VWRA		

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

FEBRUARY 2, 2011
10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
Terry Burkhart	BDWA		
Suzley Barra	AVHCWD		
JW Monro	MRCWD		
Ryan Orr	VUWRA		
Norman Nichols	ESTE		
Belen Cardo	City of Adelanto		
Perry Dahlstrom	BSWC		
Manna West	BDWA		
WAYNE L. SNIFFY	NSCD	47323 AUTUMN LEAF DR	
LINDA DE LUCA	NS-	MWA- MINIMAL PRODUCERS	
Mickey Luckman	JBWD		

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

DECEMBER 8, 2010

10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
Terry Bankhart	BDWA		
SHIRLEY BARRA	AVHCWD		
Heather Kurowski	RWD	14343 Civic Dr Victorville 92392	hkurowski@ci.victorville.ca.us
SUSAN GREEN	JBWA		
Tom Thornton	Hesperia		
CECILE CARDENAS	PPHCSD		
Bill Bennett	RWF		
NORMAN DUBOIS	ESTE		
LINDA DELUCA	NBS		
Richard Hall	MWA		
Frank Widew	H: - Desert Lake		

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

APRIL 6, 2011
10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
Marina West	BDWVA		
PERRY DAHLGREN	CSWC		
Terry Burkhead	BDWVA		
v. L. Mackey Constance	BDWVA		
Ryan Orr	VWVA		
WAYNE SNIVELY	CITIZEN	49323 AUTUMN LEAF Rd	
LINDA DELUCA	"	POB 82 NBS, 92365	
Belen Cordero	City of Adelphi		
Dana Armstrong	VWD		
Danna Aston	VWD		
Chuck Ball	Loan Officer		

MEETING SIGN-IN SHEET

TECHNICAL ADVISORY COMMITTEE

JUNE 1, 2011

10:00 A.M.

MOJAVE WATER AGENCY BOARD ROOM
22450 HEADQUARTERS DRIVE
APPLE VALLEY CA 92307

The signing, registering, or completion of this document is voluntary. All persons may attend this meeting regardless of whether they sign, register, or complete this document.

NAME	REPRESENTING	ADDRESS	EMAIL
Ellen Johnson	Baja Sic		
Maura West	BDWA		
Tarcy Burkhardt	"		
Lauma Jurkevics	CA DWR - So. Reg.	770 Fairmont Ave, Glendale	ljurkevi@water.ca.gov
Jennifer Wong	CA DWR southern reg.	"	jenwong@water.ca.gov
Ed Muzik	HIDWD CRWQCB		
Perry Dahlstan	GSWC		
George Cardenas	PPHCSO		gcardenas@pphcsd.org
Chuck Bell	L.V.		
JOE GUZZETTA	JBWD		
MICKEL LUCKMAN	JBWD		

APPENDIX C

Training Certificates and Sign-In Sheets

The CPESC® Application Review Committee
certifies that

Thomas Wyndham Thornton

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CPESC Council as a

**Certified Professional in Erosion
and Sediment Control™**

An EnviroCert International, Inc. Program

Certification Number: 6127

Certification Date: November 12, 2010

Donald W. Lake Jr.
Chair, CPESC Council

Lynn Burleson
CPESC Program Manager



The CPESC Program was established in 1982.

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)
AND
QUALIFIED SWPPP PRACTITIONER (QSP)

Thomas Thornton

May 10, 2011 – May 10, 2013

Certificate # 00572



**California Stormwater Quality Association and
California Construction General Permit Training Team**



National Flood Insurance Program
Administered by FEMA

FEMA

Elevation Certificate

2011 Certificate of Completion



FEMA

THOMAS W. THORNTON

Participant





The CESSWI™ Application Review Committee
certifies that

Eduard Varga

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1576

Certification Date: June 7, 2011



Chair, CESSWI Council



CESSWI Program Manager





The CESSWI™ Application Review Committee
certifies that

Elias Sixto Madrid Severo

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**


An EnviroCert International, Inc. Program

Certification Number: 1457

Certification Date: April 26, 2011



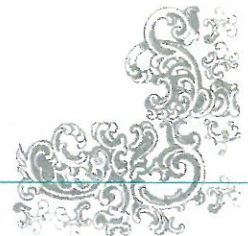
Chair, CESSWI Council



CESSWI Program Manager



The CESSWI Program was established in 2007.





The CESSWI™ Application Review Committee
certifies that

Dexter Oliver Parker

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1578

Certification Date: June 7, 2011

Susan A. Clarke

Chair, CESSWI Council

Glenda Courtney

CESSWI Program Manager



The CESSWI Program was established in 2007.

The CESSWI™ Application Review Committee
certifies that

Dennis Dean Brhel

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1600

Certification Date: June 15, 2011

Susan A. Clarke

Chair, CESSWI Council

Wanda Courtney

CESSWI Program Manager



The CESSWI Program was established in 2007.

The CESSWI™ Application Review Committee
certifies that

Lawrence Kent Brock

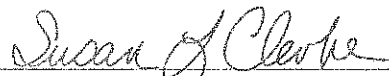
Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

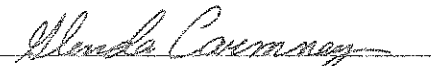
An EnviroCert International, Inc. Program

Certification Number: 1601

Certification Date: June 15, 2011



Chair, CESSWI Council



CESSWI Program Manager



The CESSWI Program was established in 2007.

The CESSWI™ Application Review Committee
certifies that

Matthew M. Cortez

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1604

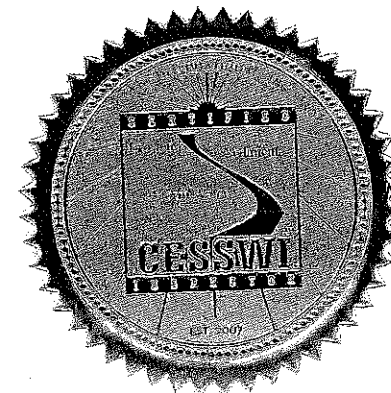
Certification Date: June 15, 2011

Susan A. Clarke

Chair, CESSWI Council

Blenda Courney

CESSWI Program Manager



The CESSWI Program was established in 2007.

The CESSWI™ Application Review Committee
certifies that

Justin Le

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1611

Certification Date: June 15, 2011

Susan A. Clarke

Chair, CESSWI Council

Wanda Courtney

CESSWI Program Manager



The CESSWI Program was established in 2007.

The CESSWI™ Application Review Committee
certifies that

R. Brad Mechem

Subscribes to the Code of Conduct and Ethics and has met the requirements
established by the CESSWI Council as a

**Certified Erosion, Sediment and
Storm Water Inspector™**

An EnviroCert International, Inc. Program

Certification Number: 1614

Certification Date: June 15, 2011


Chair, CESSWI Council


CESSWI Program Manager



The CESSWI Program was established in 2007.

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 8/02/10

Signature		Signature	
ADDANTE	N	GATES	D
ALBERTS	J ✓	GODFREY	C ✓
ALLOWAY	J ✓	HARDIN	K
ARAUJO	T ✓	HAYWOOD	S
ASHBY	R	HEARN	N
BENNINGTON	J	HERNANDEZ	M
BERAN	J ✓	ISKANDAR	J
BLAIR	M ✓	KING	K
BOURNE	C ✓	KUNATH	E
BOURQUE	S	LATIMER	J
BROWN	L ✓	LEON	R
BULGARELLI	S ✓	LOPEZ	J
BURKE	D ✓	MCCALL	R ✓
BURNSIDE	J ✓	MCDONALD	J ✓
BUSSEE	K ✓	MCKENZIE	T ✓
CHACON	R	MALABICKY	M ✓
CLARK-SPILLA	C	MARGADONNA	M ✓
CONTRERAS	H ✓	MARION	A
CRAWFORD	J ✓	MEHAFFIE	D ✓
DIAZ	R ✓	MILLER	D ✓
DICKINSON	J ✓	MOORE	M ✓
DOBOS	G ✓	MORALES	G ✓
DOMINGUEZ	R ✓	MURDOCK	S ✓
EVERETT	J ✓	NOVACK	R ✓
FAHERTY	M ✓	OBRIEN-ORTA	C ✓
GARRISON	D		

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 10/04/10

Signature		Signature	
ADDANTE	N	GATES	D
ALBERTS ✓	J	GODFREY ✓	C
ALLOWAY ✓	J	HARDIN ✓	K
ARAUJO ✓	T	HAYWOOD ✓	S
ASHBY ✓	R	HEARN	N
BENNINGTON ✓	J	HERNANDEZ	M
BERAN ✓	J	ISKANDAR	N
BLAIR ✓	M	KING ✓	K
BOURNE ✓	C	KUNATH ✓	E
BOURQUE ✓	S	LATIMER ✓	J
BROWN ✓	L	LEON ✓	R
BULGARELLI ✓	S	LOPEZ ✓	J
BURKE ✓	D	MCCALL ✓	R
BURNSIDE ✓	J	MCCURDY ✓	K
BUSSEE ✓	K	MCDONALD ✓	J
CHACON	R	MCKENZIE	T
CLARK-SPILLA	C	MALABICKY ✓	M
CONTRERAS	H	MARGADONNA ✓	M
CRAWFORD ✓	J	MARION ✓	A
DIAZ ✓	R	MEHAFFIE ✓	D
DICKINSON ✓	J	MILLER ✓	D
DOBOS ✓	G	MOORE ✓	M
DOMINGUEZ ✓	R	MORALES ✓	G
EVERETT ✓	J	MURDOCK ✓	J
FAHERTY ✓	M	NOVACK	R
GARRISON	D	O'BRIEN-ORTA	e

Come in late for video

Ⓞ

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 11/01/10

		Signature		Signature	
ADDANTE	N			GATES	D
ALBERTS	J			GODFREY	C
ALLOWAY	J			HARDIN	K
ARAUJO	T			HAYWOOD	S
ASHBY	R			HEARN	N
BENNINGTON	J			HERNANDEZ	M
BERAN	J			ISKANDAR	J
BLAIR	M			KING	K
BOURNE	C			KUNATH	E
BOURQUE	S			LATIMER	J
BROWN	L			LEON	R
BULGARELLI	S			LOPEZ	J
BURKE	D			MCCALL	R
BURNSIDE	J			MCCURDY	K
BUSSEE	K			MCDONALD	J
CHACON	R			MCKENZIE	T
CLARK-SPILLA	C			MALABICKY	M
CONTRERAS	H			MARGADONNA	M
CRAWFORD	J			MARION	A
DIAZ	R			MEHAFFIE	D
DICKINSON	J			MILLER	D
DOBOS	G			MOORE	M
DOMINGUEZ	R			MORALES	G
EVERETT	J			MURDOCK	J
FAHERTY	M			NOVACK	R
GARRISON	D			OBRIEN-ORTA	C

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 12/06/10

		Signature			Signature
ADDANTE	N		GATES	D	
ALBERTS	J		GODFREY	C	C. Godfrey
ALLOWAY	J		HARDIN	K	Kelly Hardin
ARAUJO	T		HAYWOOD	S	
ASHBY	R		HEARN	N	Michael Hearn
BENNINGTON	J		HERNANDEZ	M	
BERAN	J		ISKANDAR	J	
BLAIR	M		KING	K	
BOURNE	C		KUNATH	E	
BOURQUE	S		LATIMER	J	J. Latimer
BROWN	L		LEON	R	
BULGARELLI	S		LOPEZ	J	
BURKE	D		MCCALL	R	
BURNSIDE	J	Jon Burnside			
BUSSEE	K		MCDONALD	J	
CHACON	R		MCKENZIE	T	
CLARK-SPILLA	C		MALABICKY	M	Matt Malabicky
CONTRERAS	H		MARGADONNA	M	
CRAWFORD	J		MARION	A	Angela Marion
DIAZ	R		MEHAFFIE	D	
DICKINSON	J		MILLER	D	
DOBOS	G		MOORE	M	Mike Moore
DOMINGUEZ	R	Roland Dominguez	MORALES	G	
EVERETT	J		MURDOCK	J	J. Murdock
FAHERTY	M		NOVACK	R	
GARRISON	D		O BRIEN-ORTA	C	

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 01/03/11

		Signature		Signature	
ADDANTE	N			GATES	D
ALBERTS	J			GODFREY	C
ALLOWAY	J			HARDIN	K
ARAUJO	T			HAYWOOD	S
ASHBY	R			HEARN	N
BENNINGTON	J			HERNANDEZ	M
BERAN	J			ISKANDAR	J
BLAIR	M			KING	K
BOURNE	C			KUNATH	E
BOURQUE	S			LATIMER	J
BROWN	L			LEON	R
BULGARELLI	S			LOPEZ	J
BURKE	D			MCCALL	R
BURNSIDE	J				
BUSSEE	K			MCDONALD	J
CHACON	R			MCKENZIE	T
CLARK-SPILLA	C			MALABICKY	M
CONTRERAS	H			MARGADONNA	M
CRAWFORD	J			MARION	A
DIAZ	R			MEHAFFIE	D
DICKINSON	J			MILLER	D
DOBOS	G			MOORE	M
DOMINGUEZ	R			MORALES	G
EVERETT	J			MURDOCK	J
FAHERTY	M			NOVACK	R
GARRISON	D			OBRIEN-ORTA	C

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 02/07/11

Signature		Signature	
ADDANTE	N	GATES	D
ALBERTS	J	GODFREY	C
ALLOWAY	J	HARDIN	K
ARAUJO	T	HAYWOOD	S
ASHBY	R	HEARN	N
BENNINGTON	J	HERNANDEZ	M
BERAN	J	ISKANDAR	J
BLAIR	M	KING	K
BOURNE	C	KUNATH	E
BOURQUE	S	LATIMER	J
BROWN	L	LEON	R
BULGARELLI	S	LOPEZ	J
BURKE	D	LUEKEN	K
BURNSIDE	J	MCCALL	R
BUSSEE	K	MCDONALD	J
CHACON	R	MCKENZIE	T
CLARK-SPILLA	C	MALABICKY	M
CONTRERAS	H	MARGADONNA	M
CRAWFORD	J	MARION	A
DIAZ	R	MEHAFFIE	D
DICKINSON	J	MILLER	D
DOBOS	G	MOORE	M
DOMINGUEZ	R	MORALES	G
EVERETT	J	MURDOCK	J
FAHERTY	M	NOVACK	R
GARRISON	D	OBRIEN-ORTA	C

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 03/07/11

		Signature			Signature
ADDANTE	N		GATES	D	
ALBERTS ✓	J		GODFREY ✓	C	
ALLOWAY	J		HARDIN	K	
ARAUJO ✓	T		HAYWOOD	S	
ASHBY ✓	R		HEARN ✓	N	
BENNINGTON ✓	J		HERNANDEZ ✓	M	
BERAN	J		ISKANDAR ✓	J	
BLAIR ✓	M		KING ✓	K	
BOURNE ✓	C		KUNATH ✓	E	
BOURQUE ✓	S		LATIMER ✓	J	J. Latimer
BROWN ✓	L		LEON ✓	R	
BULGARELLI ✓	S		LOPEZ ✓	J	
BURKE ✓	D		LUEKEN ✓	K	
BURNSIDE ✓	J		MCCALL ✓	R	
BUSSEE ✓	K		MCDONALD ✓	J	
CHACON	R		MCKENZIE ✓	T	
CLARK-SPILLA	C		MALABICKY ✓	M	
CONTRERAS ✓	H		MARGADONNA ✓	M	
CRAWFORD ✓	J		MARION ✓	A	
DIAZ ✓	R		MEHAFFIE ✓	D	
DICKINSON ✓	J		MILLER ✓	D	
DOBOS ✓	G		MOORE ✓	M	
DOMINGUEZ ✓	R		MORALES ✓	G	
EVERETT ✓	J		MURDOCK ✓	J	
FAHERTY ✓	M		NOVACK	R	
GARRISON ✓	D		OBRIEN-ORTA ✓	C	

all

0

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 04/04/11

		Signature			Signature
ADDANTE	N		GATES	D	
ALBERTS	J		GODFREY	C	
ALLOWAY	J		HARDIN	K	
ARAUJO	T		HAYWOOD	S	
ASHBY	R	Rocky Ashby	HEARN	N	Nicole Hearn
BENNINGTON	J		HERNANDEZ	M	
BERAN	J		ISKANDAR	J	
BLAIR	M		KING	K	
BOURNE	C		KUNATH	E	
BOURQUE	S		LATIMER	J	J. Latimer
BROWN	L		LEON	R	
BULGARELLI	S		LOPEZ	J	
BURKE	D		LUEKEN	K	
BURNSIDE	J	Tom Burnside	MCCALL	R	R. McCall
BUSSEE	K		MCDONALD	J	
CHACON	R		MCKENZIE	T	
CLARK-SPILLA	C		MALABICKY	M	M. Malabicky
CONTRERAS	H		MARGADONNA	M	
CRAWFORD	J		MARION	A	Annalee M
DIAZ	R		MEHAFFIE	D	
DICKINSON	J		MILLER	D	Dan Miller
DOBOS	G		MOORE	M	Mike Moore
DOMINGUEZ	R	Roland Dominguez	MORALES	G	
EVERETT	J		MURDOCK	J	
FAHERTY	M		NOVACK	R	R. Novack
GARRISON	D		OBRIEN-ORTA	C	Colleen O'Orta

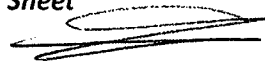
City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 05/02/11

Signature		Signature			
ADDANTE ✓	N	Nancy Addante	GATES	D	
ALBERTS ✓	J	<i>[Signature]</i>	GODFREY ✓	C	Calvin
ALLOWAY ✓	J	<i>[Signature]</i>	HARDIN	K	
ARAUJO ✓	T	<i>[Signature]</i>	HAYWOOD	S	
ASHBY ✓	R	<i>[Signature]</i>	HEARN ✓	N	Michael Hearn
BENNINGTON ✓	J	<i>[Signature]</i>	HERNANDEZ ✓	M	<i>[Signature]</i>
BERAN	J	<i>[Signature]</i>	ISKANDAR ✓	J	<i>[Signature]</i>
BLAIR ✓	M	<i>[Signature]</i>	KING ✓	K	<i>[Signature]</i>
BOURNE ✓	C	<i>[Signature]</i>	KUNATH ✓	E	<i>[Signature]</i>
BOURQUE ✓	S	<i>[Signature]</i>	LATIMER ✓	J	<i>[Signature]</i>
BROWN ✓	L	<i>[Signature]</i>	LEON ✓	R	<i>[Signature]</i>
BULGARELLI ✓	S	<i>[Signature]</i>	LOPEZ ✓	J	<i>[Signature]</i>
BURKE ✓	D	<i>[Signature]</i>	LUEKEN ✓	K	<i>[Signature]</i>
BURNSIDE ✓	J	<i>[Signature]</i>	MCCALL ✓	R	<i>[Signature]</i>
BUSSEE	K	<i>[Signature]</i>	MCDONALD ✓	J	<i>[Signature]</i>
CHACON	R	<i>[Signature]</i>	MCKENZIE ✓	T	<i>[Signature]</i>
CLARK-SPILLA	C	<i>[Signature]</i>	MALABICKY ✓	M	M Malabicky
CONTRERAS ✓	H	<i>[Signature]</i>	MARGADONNA	M	<i>[Signature]</i>
CRAWFORD ✓	J	<i>[Signature]</i>	MARION ✓	A	Amanda Marion
DIAZ	R	<i>[Signature]</i>	MEHAFFIE	D	
DICKINSON ✓	J	<i>[Signature]</i>	MILLER ✓	D	David Miller
DOBOS ✓	G	ah	MOORE ✓	M	Mike Moore
DOMINGUEZ ✓	R	Roland Dominguez	MORALES ✓	G	<i>[Signature]</i>
EVERETT ✓	J	<i>[Signature]</i>	MURDOCK ✓	J	Jim Murdock
FAHERTY ✓	M	Mike Faherty	NOVACK ✓	R	RM
GARRISON	D	Dillon Garrison	O'BRIEN-ORTA ✓	C	Colene O'Brien-Orta

City of Hesperia Public Works Division Safety Meeting Sign-In Sheet

Date: 06/06/11



Signature		Signature	
ADDANTE	N	GATES	D
ALBERTS	J	GODFREY	C
ALLOWAY	J	HARDIN	K
ARAUJO	T	HAYWOOD	S
ASHBY	R	HEARN	N
BENNINGTON	J	HERNANDEZ	M
BERAN	J	ISKANDAR	J
BLAIR	M	KING	K
BOURNE	C	KUNATH	E
BOURQUE	S	LATIMER	J
BROWN	L	LEON	R
BULGARELLI	S	LOPEZ	J
BURKE	D	LUEKEN	K
BURNSIDE	J	MCCALL	R
BUSSEE	K	MCDONALD	J
CHACON	R	MCKENZIE	T
CLARK-SPILLA	C	MALABICKY	M
CONTRERAS	H	MARGADONNA	M
CRAWFORD	J	MARION	A
DIAZ	R	MEHAFFIE	D
DICKINSON	J	MILLER	D
DOBOS	G	MOORE	M
DOMINGUEZ	R	MORALES	G
EVERETT	J	MURDOCK	J
FAHERTY	M	NOVACK	R
GARRISON	D	OBRIEN-ORTA	C



City of Hesperia

Incorporated 1988

Streets, Water & Sewer

DATE: August 06, 2010

TIME IN: 0630

LOCATION: Public Works Office Mojave Site

TIME OUT: 1230

SUBJECT: **Review SSMP & Sanitary Sewer Overflow (SSO) Response (6 Hours)**

AGENDA

- Review Sewer System Management Plan (SSMP)
- Review Sanitary Sewer Overflow (SSO) Emergency Response
- Review Sewer Master Plan

REFERENCE

City of Hesperia

- City of Hesperia's Sewer System Management Plan (SSMP)
- City of Hesperia's Sanitary Sewer Overflow (SSO) Response Plan
- City of Hesperia Sewer Master Plan

Other

- State Water Resources Control Board WDR for Collection Agencies

WASTEWATER TEAM

Colin Rowe:

Maintenance Crew Supervisor

Mark Solomon:

Senior Maintenance Worker Sewer

Albert Otero:

Maintenance Worker Sewer

Open:

Maintenance Worker Sewer

Joseph Iskander:

Maintenance Worker Sewer

Stephen Bulganelli:

Maintenance Worker Sewer

Daniel Sanchez:

Maintenance Worker Sewer

Inspector Meeting

Date/Time: September 8, 2010 – 7:00AM

Place: Engineering Conference Room 1

1. Stormwater inspections

- a. Private Development—use of Tidmark - need to report
Const site BMP's TIDMARK OR BY HAND
- b. CIP projects — SAME AS PRIVATE
- c. Regional board

2. Development Dept issues

CK OK For on site - offsite - Not Good
→ bring in examples

3. Open discussion/other inspection issues

SAFETY - always look out for safety.

DRAIN OVER D.W.

4. Next meeting

October 13, 2010

image - not familiar with area & driving around at night

Desert Springs

4.4 BMPs for Construction Site Operators

The Permittees will require construction site operators and developers to implement erosion and sediment control BMPs appropriate to their localities. The following is a list of suggested construction BMPs (*Source: USEPA-NPDES Website: National Menu of Best Management Practices for Storm Water Phase II, http://cfpub.epa.gov/npdes/stormwater/menuofbmps/con_site.cfm*).

Runoff Control

Minimize Clearing:

- Land Grading
- Preserve Natural Vegetation
- Construction Entrances

Stabilize Drainage Ways:

- Check Dams
- Filter Berms
- Riprap

Erosion Control

Stabilize Exposed Soils:

- Chemical Stabilization
- Mulching
- Permanent Seeding

Protect Steep Slopes:

- Geotextiles
- Gradient Terraces
- Soil Retention
- Temporary Slope Drain

Protect Waterways:

- Temporary Stream Crossings
- Vegetated Buffer

Phase Construction:

- Construction Sequencing
- Dust Control

Sediment Control

Install Perimeter Control:

- Temporary Diversion Dikes, Earth Dikes, and Interceptor Dikes
- Wind Fences and Sand Fences
- Brush Barrier
- Silt Fence

Install Sediment Trapping Devices

- Sediment Basins and Rock Dams
- Sediment Filters and Sediment Chambers
- Sediment Trap

Inlet Protection

- Storm Drain Inlet Protection

4.5 Good Housekeeping BMPs for Construction Sites

The Permittees will require all construction site operators to control waste. Typical construction wastes are: discarded building materials, concrete truck wash out, chemicals, litter, and sanitary waste. These may cause adverse impacts to water quality. Practices, which will assist in the prevention of prohibited discharges, will be required for all construction sites. They include: General Construction Site Waste Management, Spill Prevention and Control Plan, Vehicle Maintenance and Washing Area, and BMP Inspection and Maintenance, will be required for all construction sites. The following is a brief description of these mandatory BMPs.

General Construction Site Waste Management

Building materials and construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or ground water.

The proper management and disposal of wastes should be practiced at any construction site to reduce storm water runoff. Waste management practices can be used to properly locate refuse piles, to cover materials that may be dispersed by wind, rainfall or storm water runoff, and to prevent spills and leaks from hazardous materials that are improperly stored.

The detailed description of this BMP may be found at the EPA-NPDES website on National Menu of BMPs for Storm Water Phase II:
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/site_21.cfm.

Spill Prevention and Control Plan

Spill prevention and control plans should clearly state measures to: prevent a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills.

Spill prevention and control plans are also applicable to construction sites where hazardous materials are stored or used. Hazardous materials include: pesticides, paints, cleaners, petroleum products, fertilizers, and solvents.

The detailed description of this BMP may be found at the EPA-NPDES website on National Menu of BMPs for Storm Water Phase II:
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/site_34.cfm.

Vehicle Maintenance and Washing Areas

Maintenance and washing of vehicles should be conducted using environmentally responsible practices to prevent discharges of wastewater or hazardous wastes to surface or ground waters. This involves designating covered paved areas for maintenance and washing, eliminating improper connections from these areas to the storm drain system, developing a spill prevention and cleanup plan for shop areas, maintaining vehicles and other equipment that may leak hazardous chemicals, covering fuel drums and other materials that are stored outdoors, and properly handling and disposing of automotive wastes and wash water.

Environmentally friendly vehicle maintenance and washing practices are applicable for every construction site to prevent contamination of surface and ground water from wash water and spills/leaks of fuel, coolant, or antifreeze.

The detailed description of this BMP may be found at the EPA-NPDES website on National Menu of BMPs for Storm Water Phase II:

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/site_41.cfm.

BMP Inspection and Maintenance by Contractor

To maintain the effectiveness of construction site storm water control BMPs, regular inspection of control measures is essential. Generally, inspection and maintenance of BMPs can be categorized into two groups: expected routine maintenance and non-routine (repair) maintenance. Routine maintenance refers to checks performed on a regular basis to keep the BMP in good working order and aesthetically pleasing. In addition, routine inspection and maintenance is an efficient way to prevent potential nuisance situations (odors, mosquitoes, weeds, etc.), reduce the need for repair maintenance, and reduce the chance of polluting storm water runoff by finding and correcting problems before the next rain. Non-routine maintenance refers to any activity that is not performed on a regular basis. This type of maintenance could include major repairs after a violent storm or extended rainfall, or replacement and redesign of existing control structures.

All storm water BMPs should be inspected by the general contractor for continued effectiveness and structural integrity on a regular basis for the life of the construction project. Generally, all BMPs should be inspected after each storm event in addition to the regularly scheduled inspections.

The detailed description of this BMP may be found at the EPA-NPDES website on National Menu of BMPs for Storm Water Phase II:

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/site_2.cfm.

STORMWATER PROGRAM CONDITIONS

DESCRIPTION	WORDING
Industrial Illegal Discharge	Observed
Commercial Illegal Discharge	Observed
Const. Site Illegal Discharge	Observed
Tract Const. Illegal Discharge	Observed
Residential Illegal Discharge	Observed
Industrial Illegal Discharge	Evidence - Not Observed
Commercial Illegal Discharge	Evidence - Not Observed
Const. Site Illegal Discharge	Evidence - Not Observed
Tract Const. Illegal Discharge	Evidence - Not Observed
Residential Illegal Discharge	Evidence - Not Observed
Industrial Site w/o BMP/SWPPP	Company Aware
Comm'l Site w/o BMP/SWPPP	Company Aware
Const. Site w/o BMP/SWPPP	Company Aware
Tract Const. w/o BMP/SWPPP	Company Aware
Residential Const. w/o BMP/SWPPP	Company Aware
Industrial Site w/o BMP/SWPPP	Company Unaware
Commercial Site w/o BMP/SWPPP	Company Unaware
Const. Site w/o BMP/SWPPP	Company Unaware
Tract Const. w/o BMP/SWPPP	Company Unaware
Residential Const. w/o BMP/SWPPP	Company Unaware
Industrial Site w/o BMP/SWPPP	Wet Season
Comm'l Site w/o BMP/SWPPP	Wet Season
Const. Site w/o BMP's/SWPPP	Wet Season
Tract Const. w/o BMP's/SWPPP	Wet Season
Residential Const. w/o BMP/SWPPP	Wet Season
Industrial Site w/o BMP/SWPPP	Dry Season
Comm'l Site w/o BMP/SWPPP	Dry Season
Const. Site w/o BMP's/SWPPP	Dry Season
Tract Const. w/o BMP's/SWPPP	Dry Season
Residential Const. w/o BMP/SWPPP	Dry Season
Industrial Site w/o BMP/SWPPP	No NPDES Permit
Commercial Const. Site	No NPDES Permit
Construction Site	No NPDES Permit
Tract Const. Site	No NPDES Permit
Residential Const. Site	No NPDES Permit
Illicit Connection	Not Currently Discharging
Illicit Connection	Currently Discharging
Const.-Non Compliance w/WQMP	Observed
Const.-Non Compliance w/WQMP	Evidence - Not Observed
Const.-Not Structural BMP Built	Observed

Const.-Not Structural BMP Built	Evidence - Not Observed
Const.-Not Maint'g Struct'l BMP	Observed
Const.-Not Maint'g Struct'l BMP	Evidence - Not Observed

MEETING WITH INSPECTORS

9-8-10

Sign in sheet

NAME

HELEN Wilson

Associate Civil Engr.

Corn P.

Eng Aide III

X^o S. SALINAS SR

PUBLIC WORKS INSPECTOR

Lee Logsdon

Public Works Inspector

Jim White

Inspector

HAZ MAT TRAINING ~ November 22, 2010 ~ 7:30am - 9:30am

Instructor: Brian Otter/County Fire

Location: Hearing Room

	PRINT NAME	SIGN
1	Ron Martin	Ron Martin
2	Bruce Nelson	Bruce Nelson
3	DELVIN HOLMES	Delvin Holmes
4	TRICKA A. WILLIAMS	Tricka A. Williams
5	BOB EVANS	Bob Evans
6	Craig Sherman	Craig Sherman
7	Joseph Bonaparte	Joseph Bonaparte
8	ED HARTWELL	Ed Hartwell
9	KEVIN CAUENA	Kevin Cauena
10	JOE GOMEZ	Joe Gomez
12	Robert LUCERO	Robert Lucero
13	Brewin Blas	Brewin Blas
14	Thomas Robertson	Thomas Robertson
15	MANUEL GONZALES	Manuel Gonzales
16	TYSON FRISTROM	Tyson Fristrom
17	Scott RYAN	Scott Ryan
18	DAVID A. MELLOR	David A. Mellor
19	BEALYN CROWL	Bealyn Crowl
20	MIKE HODGE	Mike Hodge
21	BRIAN KLOPFER	Brian Klopfert
22	Roger GARDNER	Roger Gardner
23	Bill LITTLE	Bill Little
24	MANNY RIVERA	Manny Rivera
25	Stephanie Hernandez	Stephanie Hernandez
26	LAMAR ALLMAN	Lamar Allman
27	JEAN HANSEN	Jean Hansen
28	KENNETH CE	Kenneth Ce
29	Rail Briseno	Rail Briseno
30	Rick Ferguson	Rick Ferguson
31	Bruce Hanson	Bruce Hanson
32	A George Pallas	A George Pallas
33	Frank Opick	Frank Opick
34	DEBBIE PARKER	Debbie Parker
35	RODNEY REYNOLDS	Rodney Reynolds
36	EDUARDO VALERA	Eduardo Valera
37	Janet Dietzman	Janet Dietzman
38	ELIAS M. SEVERO	Elias M. Severo
39	Roy Mundy	Roy Mundy
40	Wanda Otter	Wanda Otter
41	JACK BALLESTEROS	Jack Ballesteros
42	Thomas Gomez	Thomas Gomez

HAZ MAT TRAINING ~ November 22, 2010 ~ 7:30am - 9:30am

Instructor: Brian Otter/County Fire

Location: Hearing Room

43	Donald S Toy	Dismissed
44	ANGEL LEMUS	Dismissed
45	ERWIN JOGELSON	Dismissed
46	Grant Mann	Dismissed
47	JOHN LATSKO	Dismissed
48	santa straton	Dismissed
49		
50		
51		
52		
53		
54		
55		



Caltrans

WEBCAST

Caltrans Projects and Compliance with the Construction General Permit



**Wednesday,
October 27, 2010
10:00am – 10:30am PDT**

**Click here to register
(no fee to register)**

Join Caltrans for an information-sharing via a 30-minute webcast!

The webcast will cover information on procedures for Caltrans construction projects to comply with the New Construction General Permit. Caltrans construction projects are required to comply with the new Construction General Permit that went into effect July 1, 2010.

You will hear from Caltrans Headquarters Division of Environmental Analysis, Division of Design and Division of Construction on the following:

- Risk Level 1 Projects
- Construction Stormwater Compliance Briefers "the Dispatch"
- Available Information, Tools, and Guidance on the Caltrans website

This webcast will be recorded and will be available at a later date. Recorded webcasts and other information are available by visiting the Caltrans Stormwater Program website.

<http://www.dot.ca.gov/hq/env/stormwater/cgp/index.htm>

Please Print Clearly!

This list will be used to confirm your attendance.

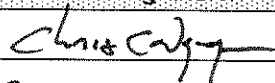
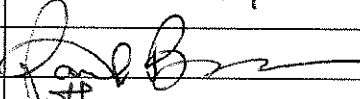
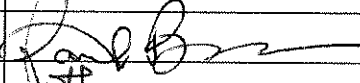
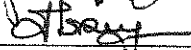
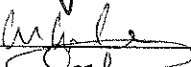


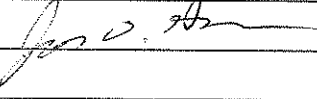
Webcast Seminar **Caltrans Projects and Compliance with the Construction General Permit**

Date: 10/27/2010

Time: 10:00:00 AM

Host Anna Lantin / Caltrans

Location: RM 200, 825 E. Third St. San Bernardino CA 92415

	Name (Please Print Clearly)		Signature	City / Department	Phone	Conf. Date
1	Nguyen	Chris		Transportation Design	(909) 387-7948	10/27/10
2	Al-Rayes	Nidham		Contracts Division	(909) 387-1831	"
3	BRISQ	Ravi		Co of L.B. / EMD	909 387 8140	
4	Sudhramony	Sriragan		Contracts	909 387 7935	
5	Le	Kenneth		EMD	909-387-8058	
6	SEVERO	Elias		EMD	(909) 387-8103	
7	BUSUCOS	ELIAS		FLOOD CONTROL ENG'G.	(909) 387-8297	
8	SMITH	JOE		F.C. Eng.	(909) 387-7966	
9						
10						
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Please Print Clearly!

This list will be used to confirm your attendance.

Class :	STORM WATER POLLUTION PREVENTION PLAN PREPARATION	Date:	08/19/2010	Time:	12:30 pm - 4:30 pm
	Session 1	Location:	825 E. Third Street, Hearing Room		
Instructors:	DAN ILKAY		San Bernardino, CA 92415		

	Name (Please Print Clearly)	Signature	City / Department	Title
1	Jon Smith	<i>Jon D. Smith</i>	FC Eng.	PWE III
2	Chris Nguyen	<i>Chris Nguyen</i>	TRANS DESIGN	PWE III
3	Srirajan Sundaramoorthy	<i>Srirajan Sundaramoorthy</i>	Contracts	RE
4	Jinghui Bradley	<i>Jinghui Bradley</i>	Contracts	
5	Emilio Ranosa	<i>Emilio Ranosa</i>		
6	Pol Arsua	<i>Pol Arsua</i>	TRANS DESIGN	PWE II
7	Mohammad Ali	<i>Mohammad Ali</i>	Trans Design	PWE III
8	Harold Zamora	<i>Harold Zamora</i>	PC Planning	PWE III
9	Chris Saed	<i>Chris Saed</i>	Trans Design	PWE III
10	Mike DeBenedet	<i>Mike DeBenedet</i>	Trans Design	ET IV
11	Don Johnson	<i>Don Johnson</i>	TRANS DESIGN	REC 5
12	John Flasher	<i>John Flasher</i>	" "	PWE #
13	Sana Bashir	<i>Sana Bashir</i>	Trans Design	PWE II
14	Catalino Lazo	<i>Catalino Lazo</i>	TRANS DESIGN	PWE III
15	Mike Fam	<i>Mike Fam</i>	Federal Project	Eng Tech IV
16	Mervate Estephan	<i>Mervate Estephan</i>	Federal Project	Tech III
17	Mervate Mikhail	<i>Mervate Mikhail</i>	FCD	PWE III
18	Hoa Lam	<i>Hoa Lam</i>	Flood Design	PWE II
19	David Bunch	<i>David Bunch</i>	FLOOD DESIGN	
20	Kyle McConnell	<i>Kyle McConnell</i>	" "	TECH IV
21	Monty Morshed	<i>Monty Morshed</i>	Flood Control	PWE II
22	Chris McCormick	<i>Chris McCormick</i>		
23	Johnny Gayman	<i>Johnny Gayman</i>	SWMD	PWE III
24	Darren Meeka	<i>Darren Meeka</i>	SWMD	PWE II
25	Sharon Bishop	<i>Sharon Bishop</i>	SWMD	PWE III
26	Marc Rodabaugh	<i>Marc Rodabaugh</i>	SWMD	PWE III
27	Dan Ilkay	<i>Dan Ilkay</i>		
28	Eduard Varga	<i>Eduard Varga</i>	S.B. County EMD	ET V
29	Kenneth Le	<i>Kenneth Le</i>	S.P	ET IV
30	Elias Severo	<i>Elias Severo</i>	EMD	TECH IV
31	Raul Briseno	<i>Raul Briseno</i>	EMD	TECH IV
32	Dexter Parker	<i>Dexter Parker</i>	EMD	ENG. TECH II
33	Noel Castillo	<i>Noel Castillo</i>	Fontana Engineering	Senior Engineer

Steve Nawar

Steve Nawar

Fontana

Senior Engineer

Keith Tolliver

Keith Tolliver

Fontana

Assistant Engineer

Please Print Clearly!

This list will be used to confirm your attendance.

Class : **STORM WATER POLLUTION PREVENTION PLAN PREPARATION**
 Session 1
 Instructor: DAN ILKAY

Date: **08/25/2010** Time: **12:30 pm - 4:30 pm**
 Location: 825 E. Third Street, Hearing Room
 San Bernardino, CA 92415

	Name (Please Print Clearly)	Signature	City / Department	Title
1	Milo Rivera			
2	Irma Ulloa		Trans Design	tech IV
3	Paul Work		Transportation Design	Eng Tech III
4	Chris Hale			
5	Diflan Dellan Nicado Nicdao		FCD	ETV
6	Michele Derry		EMD	power
7	John Schatz		EMD	
8	Nidham Al-Rayes		Contracts	PWE III
9	Vijay Mathur		Trans. Planning	PWE II
10	Chema Ude		EMD	Sr Assc Planner
11	Patrick Egle			
12	Ellie Hargrove		Trans Design	ETIV
13	Gerry Mermilloid		cc	ETV
14	Andy Silao		TRANS DESIGN	PWE II
15	David Lovell		FCD	PWE III
16	Claudia Brunson		Trans Design	Tech II
17	Elias Busuego		FEDERAL PROJ. / P.C. ENGG.	PWE II
18	Doug Miner		SWMD	PWE III
19	Franklin Luna		CONTRACTS	PWE III
20	Diana Torres		SWMD	PWE II
21	Mary Patterson		SWMD	Solid Waste Prog. Administrator
22	Rubin Domingo		TRANS DESIGN	PWE I
23	Matthew Addington		Kawato Cucamonga	ASSOCIATE ENGINEER
24	Lawrence White			
25	Mike Moore		City of Rancho Cucamonga	Inspector
26	Roberto Hurtado			
27	Chris Curry		MARINA LANDSCAPE INC	ASSOCIATE
28	Joseph Rosales		Moutclair	NPES Coordinator

Please Print Clearly!

This list will be used to confirm your attendance.

Class: STORM WATER POLLUTION PREVENTION PLAN PREPARATION
 Session 1
 Instructor: DAN ILKAY

Date: 08/25/2010 Time: 12:30 pm - 4:30 pm
 Location: 825 E. Third Street, Hearing Room
 San Bernardino, CA 92415

	Name (Please Print Clearly)		Signature	City / Department	Title
29	Jillian	Peterson		Trans Design	ET I
30	Elias	Severo		EMD	ET IV
31	Kenneth	Le		EMD	ET IV
32	Raul	Briseno		EMD	ET VI
33	Eduard	Varga			
34	Dexter	Parker			
35	Dan	Ilkay		EMD	
36	Mindy	Davis		EMD	Planner I
37	Linda	Mauzy		Lilburn Corp.	Env. Analyst/Planner
38	Sheila	Debrido		Trans Design	ET III
39	Scott	Rapp		Rancho Cucamonga	NPDES Insp
40	CHRIS	HALP		TRANS DESIGN	TECH I
41	DAVID				
42	ANTHONY	MISTRETTA		FCD	INTERN
43	WDE	CIEMA		EMD	SNR Planner
44	Huertado	Robert		Flood Design	ET3
45	SILAO	ANDY		TRANS DESIGN	FW II
46	RAVOSA	EMILIO		"	"
47					
48					
49					
50					
51					
52					
53					
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55					
56					

APPENDIX D

Community Clean Up and Recycling Event Flyers

Community Clean Up Day

Town of Apple Valley



"A Better Way of Life"

Help clean up our Town

Saturday, Oct. 23

8:30 a.m. to Noon



Sign up in advance!

All supplies provided

Free lunch and event t-shirts

(while supplies last)

Churches, Schools, Clubs, Families, & Businesses



"A Better, Greener, Way of Life"

1 (760) 240-7000 x 7071 • www.AppleValley.org •



Town of Apple Valley

Community Clean Up Day



Clean Up & Take Pride!

Saturday, April 9

8:30 a.m. to Noon



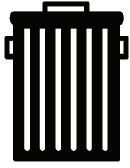
Sign up in advance!
All supplies provided.
Free lunch and t-shirt
while supplies last.

"A Better, Greener, Way of Life"

(760) 240-7000 x 7071 • www.AppleValleyEvents.org



**KEEP OUR
COMMUNITY
CLEAN**



Are you in the mood for some real household cleaning? Are you looking for a place to take unwanted household goods and old tires? Would you like to clean up your neighborhood and be a part of “Make a Difference Day”? If you said “yes”, the City of Hesperia would like to help.

City of Hesperia
Bi-annual Citywide Clean-up Day
and
Tire Amnesty Day
Saturday, October 23, 2010
7:30 am - 12 pm
Advance Disposal
17105 Mesa Street
(enter from Santa Fe only)

No Household Hazardous Waste, loose dirt, concrete or rocks will be accepted.
All items MUST be boxed, bundled, or bagged.

Tire drop-off is located outside the gates of Advance Disposal as tires are not accepted at the Advance Disposal Facility.

Seniors and the disabled may schedule curbside pick-up for clean-up day items, excluding tires, by calling (760) 947-1225 before Thursday, October 21, at 3 pm.

The City and Advance Disposal reserve the right to refuse materials not properly contained.

**KEEP OUR
COMMUNITY
CLEAN**



Are you in the mood for some real household cleaning? Are you looking for a place to take unwanted household goods? Would you like to clean up your neighborhood? If you said “yes”, the City of Hesperia would like to help.

City of Hesperia
Citywide Clean-up Day
Saturday, April 9, 2011
7:30 am - 12 pm
Advance Disposal
17105 Mesa Street
(enter from Santa Fe only)

No Household Hazardous Waste, loose dirt, concrete or rocks will be accepted.
All items **MUST** be boxed, bundled, or bagged.

Tires may be dropped off at the Tire Amnesty Event outside the gates of Advance Disposal as tires are not accepted at the Advance Disposal Facility.

Seniors and the disabled may schedule curbside pick-up for clean-up day items, excluding tires, by calling (760) 947-1225 before Thursday, April 7, at 3 pm.

The City and Advance Disposal reserve the right to refuse materials not properly contained.



City of Hesperia

Tire Amnesty Day

Saturday, April 9, 2011

7:30 am - 12 pm

Mesa Street across from

Advance Disposal

(enter from Santa Fe only)

- Tire drop-off is free of charge & offered to Hesperia residents only
- Proof of residency required
- Maximum of nine (9) tires per vehicle only
- Only rimless passenger car & light truck tires
- No semi, truck or 44" tires accepted
- No tires from commercial dealers accepted



Funded by a grant from the California Department of
Resources Recycling and Recovery.

FREE DROP-OFF

Victor Valley MRF Recycling Center

17000 Abbey Lane in Victorville (just off Stoddard Wells Road)

SHRED-FEST 2010

Feb 6 - May 1 - Aug 7 - Nov 6

Saturday - Feb 6 - 8am to 12 noon



On your way to the landfill? Recycle at the MRF instead.



Drop off old TVs, computers, & appliances for FREE!



+ Drop off scrap metal, mixed paper, plastic, glass, cardboard, & newspaper.



+ Redeem your CRV bottles & cans for \$ CASH!



+ Bring up to 4 "bankers boxes" of confidential documents to shred - for FREE!



Got Mulch?

Need mulch for your yard? There will be FREE mulch at the MRF during the Shred-Fest/Open House event. This is a "load your own" mulch giveaway, so bring your own shovels as well as bags or other containers to load mulch into. The giveaway is for residents only — no businesses or commercial vehicles. Mulch LIMIT up to 50 gallons.



Sponsored by Burrtec Waste Industries, the City of Victorville and the Town of Apple Valley. For more info contact the City of Victorville Recycling Program at (760) 955-8615 or call the Victor Valley MRF Recycling Center at (760) 241-1284.

Helen Wilson

From: Starlene Seargeant [michelle@vvchamber.ccsend.com] on behalf of Starlene Seargeant [sseargeant@vvchamber.com]
Sent: Thursday, August 19, 2010 4:10 AM
To: Helen Wilson
Subject: Save the Date for the Victorville Clean-up Day!



SAVE THE DATE

for the

Victorville Community Clean-up Day

Please mark your calendars for the Fall Clean-up Day, October 23, 2010, and watch your email for more information as the date gets closer.

Thank you!

Starlene Seargeant
Victorville Chamber of Commerce

*Thank you to these sponsors who
have already signed up!*

Daily Press
Desert Valley Medical Group
Shear Realty - Victorville

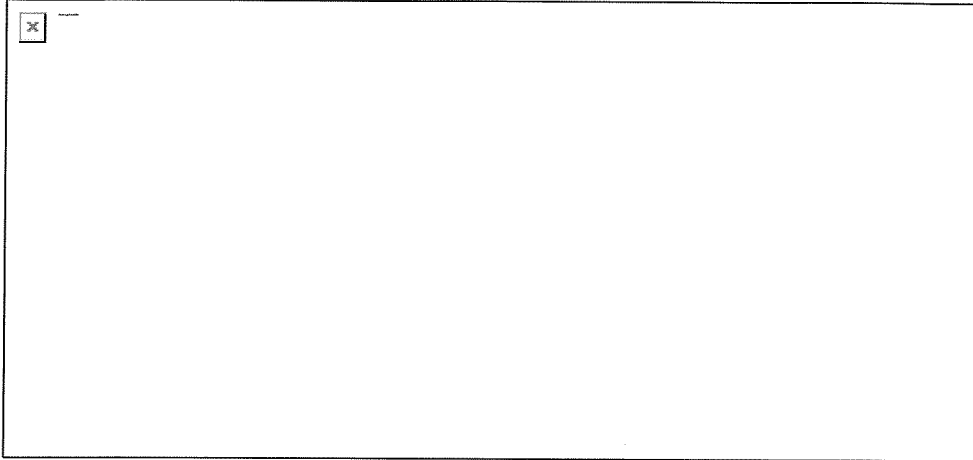
Please Contact Starlene
at the Victorville Chamber if you are interested in sponsoring
at 760 245-6506 or email at sseargeant@vvchamber.com



[Forward email](#)

Helen Wilson

From: Starlene Seargeant [michelle@vvchamber.ccsend.com] on behalf of Starlene Seargeant [sseargeant@vvchamber.com]
sent: Thursday, March 03, 2011 4:25 PM
To: Helen Wilson
Subject: Victorville Clean-up Day! Waivers available



Hi, I wanted to let you know that the waivers for the Community Clean-up are available. You can also go to the website at www.vvchamber.com for info or if your group would like to be a sponsor of this great event. I hope to see you and your organization at our spring Victorville Community Clean-up on April 9, 2011. [Click here for waiver](#)

Thank you!
Starlene Seargeant
Victorville Chamber of Commerce



[Forward email](#)

 **SafeUnsubscribe**

 Trusted Email from
Constant Contact

Try it FREE today.

This email was sent to hwilson@ci.victorville.ca.us by sseargeant@vvchamber.com |
[Update Profile/Email Address](#) | Instant removal with [SafeUnsubscribe™](#) | [Privacy Policy](#).
Victorville Chamber of Commerce | 14174 Green Tree Blvd. | Victorville | CA | 92395

Celebrate Earth Day at the "MRF"



**SATURDAY
APRIL 16**

8 a.m. to Noon
Victor Valley
Materials Recovery Facility (MRF)
17000 Abbey Lane, Victorville

FREE ADMISSION • FREE PARKING

**SHRED
FEST!**

Residents may bring up to four 20-pound boxes of files to shred on site.
Free for Victor Valley residents.

**FREE TIRE
DROP
OFF**

FREE TIRE DROP OFF: Victorville and Apple Valley residents
only. Limit nine tires. No businesses. ID Required.

**FREE MINI
DEMOS**

FREE MINI DEMOS: Recycled Crafts • Environmental Education •
Composting • How to Recycle • Vermicomposting •
Compost Giveaway • Come see how the MRF works!

For more information, go to www.urecycle.org, call 760.241.1284, or 1.888.URECYCLE.

**DOOR
PRIZES!**

Sponsored by the Mojave Desert & Mountain Recycling Authority Member agencies:
City of Adelanto, Town of Apple Valley, City of Victorville, San Bernardino County
and Burrtec Waste Industries, Inc.

PRINTED ON RECYCLED PAPER

CELEBRATING EARTH DAY IN THE VICTOR VALLEY

FREE DROP-OFF

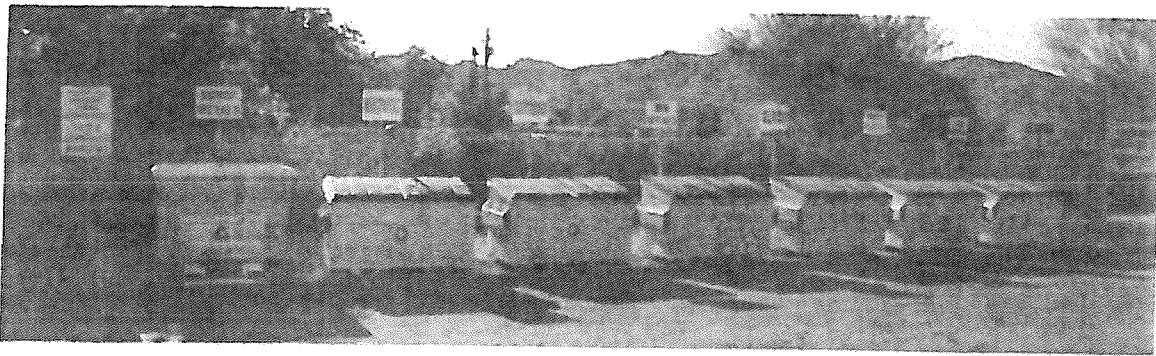
Victor Valley MRF Recycling Center

17000 Abbey Lane in Victorville (just off Stoddard Wells Road)

SHRED-FEST 2010

Saturday, August 7, 2010

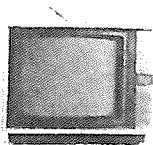
8 a.m. to 12 noon



On your way
to the landfill?
Recycle at the
MRF instead.



Drop off
old TVs,
computers,
& appliances
for FREE!



+ Drop off
scrap metal,
mixed paper,
plastic, glass,
cardboard, &
newspaper.



+ Redeem
your CRV
bottles & cans
for \$ CASH!



+ Bring up to 4
"bankers boxes"
of confidential
documents
to shred -
for FREE!



**Got
Mulch?**

Need mulch for your yard? There will be FREE mulch at the MRF during the Shred-Fest/Open House event. This is a "load your own" mulch giveaway, so bring your own shovels as well as bags or other containers to load mulch into. The giveaway is for residents only — no businesses or commercial vehicles. Mulch LIMIT up to 50 gallons.



Sponsored by Burrtec Waste Industries, the City of Victorville and the Town of Apple Valley. For more info contact the City of Victorville Recycling Program at (760) 955-8615 or call the Victor Valley MRF Recycling Center at (760) 241-1284.

"Recycle Alley" FREE DROP-OFF

Sponsored by Burrtec Waste Industries, the City of Victorville and the Town of Apple Valley.

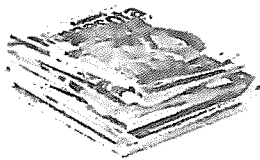
Victor Valley MRF Recycling Center

17000 Abbey Lane in Victorville

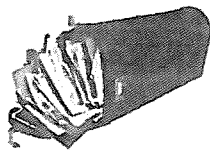
Open Monday–Friday 8 a.m. to 4 p.m.

and Saturday 8 a.m. to 12 noon

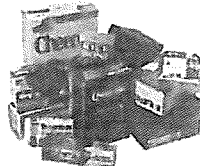
Here's What You Can Recycle At the "MRF!"



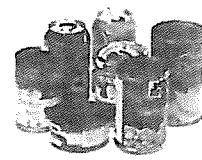
magazines & catalogs



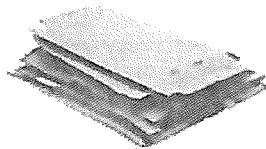
junk mail



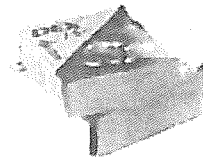
thin cardboard



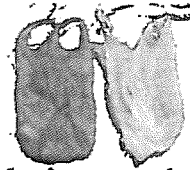
aluminum & tin food cans



corrugated cardboard



phone books



plastic grocery bags



paper bags & shred



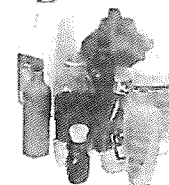
newspaper



office paper



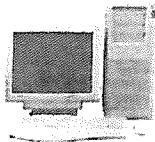
glass bottles & jars



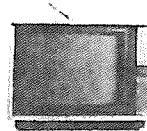
plastic containers #1 - #7



appliances



computers



TVs



scrap metals

ShredFest 2010 Saturday, August 7th!

To find out more about the recycling services available at the MRF or for more information on how to RECYCLE in the City of Victorville, call (760) 955-8615.

Or visit our website at www.VictorvilleRecycles.com.

Did You Know?

A NEW Recycling Collection Center is Opening Near You!

Located at 15134 Anacapa Road in Victorville (nearest cross street - Amargosa Rd)

FREE DROP-OFF

Old TVs, computers & appliances
mixed paper, plastic, glass,
cardboard, newspaper,
& scrap metal



NEW!

Opening - Aug 26

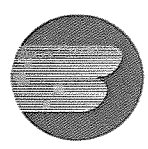
**Mon - Fri 8am to 4pm
& Sat 8am to 12 noon**

At the old H&E building
off of Anacapa Rd.
in Victorville

**Why pay to take old
recyclables to the landfill?
Visit Recycle Alley today!**

Open to All Residents!

Sponsored By...



BURRTEC
WASTE INDUSTRIES, INC.
"We'll Take Care Of It"

Printed On Recycled

2010

"Recycle Alley, too" **FREE DROP-OFF**

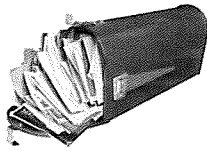
Sponsored by Burrtec Waste Industries and the City of Victorville.

Recycling Collection Center
15134 Anacapa Road in Victorville
Open Monday—Friday 8 a.m. to 4 p.m.
and Saturday 8 a.m. to 12 noon

Here's What You Can Drop-Off At the "NEW" Recycling Collection Center!



magazines & catalogs



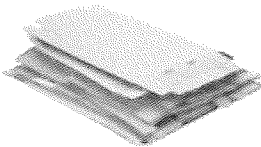
junk mail



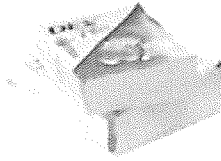
thin cardboard



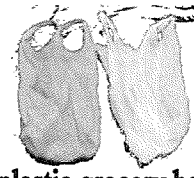
aluminum & tin food cans



corrugated cardboard



phone books



plastic grocery bags



paper bags & shred



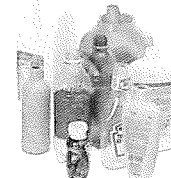
newspaper



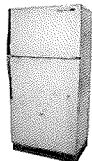
office paper



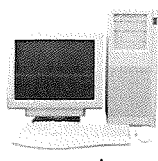
glass bottles & jars



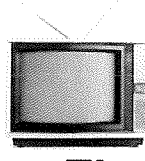
plastic containers #1 - #7



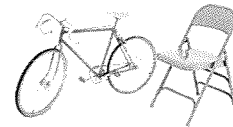
appliances



computers



TVs



scrap metals

Don't pay to take recyclables to the landfill drop them off for **FREE** at Recycle Alley!

To find out more about the recycling services available or for more information on how to RECYCLE in the City of Victorville, call (760) 955-8615. Or visit our website at www.VictorvilleRecycles.com.

Helen Wilson

From: Pam Gerbitz
Sent: Monday, August 23, 2010 3:03 PM
To: Department Head Secretaries; Barbara Soper; Boni Jones; Dana Wellborn; Dave Cockrum; Doug Mathews; Erica Zeltner-King; Jenele Davidson; Joe Flores; Justin Foster; Lathresia Ballou; Louie Rodriguez; Marisa Fratt; Marquita Ogilvie-Harper; Michael Cathcart; Rod Sorensen; Rosalinda Ratliff; Sandra Haines; Bobby Gomez; Donny Sanchez; Elizabeth Becerra; Mike Boock; Mitch Tucker; Robert Manriquez; Tim Jenkins; Joey Medina; John Garcia; Kelley Holland; Michelle Gomez; Rosemary Machorro; Joseph Danner; Luis Mota; Noah Caracciolo; Richard Owens; Robert Denny; Spencer Ezaki
Subject: "Recycle Alley, too!" Recycle Collection Center
Attachments: Recycle Alley too flier 8 2010.pdf

NEW! "RECYCLE ALLEY, too!" FREE RECYCLE COLLECTION CENTER DROP-OFF...Located at 13154 Anacapa Road in Victorville.

Always seeking new ways to provide service to our residents, The City of Victorville Recycling Program and Burrtec Waste Industries are **OPENING a Drop-Off Recycling Collection Center this Thursday, August 26, 2010** at the former H & E building (near Palmdale Road).

The center will accept:

Old TVs

Computer monitors

Scrap metal

Newspapers cardboard

Glass plastics

Mixed plastics

Plastic grocery bags

The facility is open M—F from 8 a.m. to 4 p.m. and on Saturdays from 8 a.m. to 12 noon.

Thanks!

Ro

Ro Ratliff
Administrative Operations Assistant
City of Victorville Recycling Program
(760) 955-8615



ELECTRONIC WASTE DISPOSAL

The following items can no longer be disposed in a solid waste landfill:

- Computer Monitors
- Televisions
- Fluorescent Tubes
- Microwave Ovens
- VCRs/DVD Players
- CPUs
- Printers
- Cell/Mobile Phones
- Telephones
- Radios/Stereos
- Clothes Irons
- Space Heaters
- Musical Cards

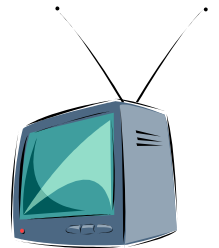


For information on recycling and disposal options call 1-800-Oily Cat or (909) 382-5401, Monday through Friday, 7:30 a.m. to 4:30 p.m.

For non-residential and business waste disposal, call 1-800-Oily Cat, 1-800-Cleanup or check yellow pages for electronic waste recyclers and collectors.



MANEJO DE BASURA ELECTRONICA

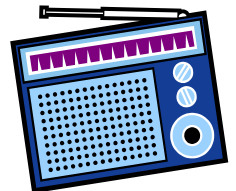


Los siguientes artículos no podrán ser depositados en los rellenos sanitarios:

- Monitores de Computadora
- Televisores
- Lámparas fluorescentes
- Microondas
- VCR's (video-cassetteras)
- CPU's (cerebros de computadora)
- Impresoras
- Teléfonos Celulares/Mobiles
- Teléfonos
- Radios/Estereos
- Planchas
- Calentones portátiles
- Tarjetas que contengan baterías

Para información de opciones de reciclaje o disposición de estos artículos por favor llame al 1-800-OILY CAT o al (909) 382-5401 de Lunes a Viernes de 7:30 a.m. – 4:30 p.m.

Para artículos de negocios o locales no residenciales, llame al 1-800-OILY CAT, al 1-800-CLEANUP o consulte las páginas amarillas para información sobre centros de colección y el reciclaje de artículos electrónicos.



APPENDIX E

Sample Public Education Letters



13247 AMETHYST ROAD
VICTORVILLE, CA 92392
(760) 843-3577
FAX (760) 843-1078

Principal
Robert Hill
rhill@vesd.net

School Secretary
Cristi Ramos
cramos@vesd.net

Penny Edmiston
Discovery School of the Arts
15579 8th Street
Victorville, CA 92395

March 2, 2011

Ms. Kelly Koehler
Westbound Communications
4155 N. Golden Avenue
San Bernardino, CA 92404

Dear Ms. Koehler,

Thank you for taking the time to present "Mojave River Watershed" to our third and fourth graders on February 18th. What a feat - 300 students were able to participate within your two presentations! Thank you also for the flexibility due to our constraints of setting up the cafeteria for lunch time.

My students commented on how much they enjoyed learning ways to keep our environment safe and clean. They learned some simple, yet important ways to conserve water and how pollution and littering effects the watershed and groundwater that we all need to preserve! In addition, they learned that having a pet means being especially responsible with the waste produced and how to safely dispose of it. And of course, your generosity with providing pencils recycled from money was an instant motivator! My students are using them sparingly because they like them so much!

Certainly in this time of limited budgets and cutbacks to school funding, this was a great opportunity for our children; I hope that funding will continue and allow you to present to other schools, as well as perhaps return to ours with different shows!

Thank you again for your time and awesome presentation!

Sincerely,

Penny Edmiston, 4th grade teacher

March 2, 2011

Dear Mrs. Koehler,

Thank you for coming to our school. The "Mojave Watershed" must be a lot of work! You taught me a lot.

I have picked up after my dog, Maisy, she gas a lot! When I take her on a walk I bring a trash bag and keep using it. Maisy can even get the trash bag for me!

Now since you mentioned it I have been taking five minute showers. Even, if the water is cold I still get in. I even use recycled cups.

I went to the beach and we saw a lot of trash, we picked it up and threw it away. I started a cause at school called "The Clean Up". I now reuse all my bottles of water. Thank you for the pencils.

Sincerely, Sierra
Kimball

March 2, 2011

Dear Mrs. Koehler,
Thank you for sharing
"Mojava River Watershed" with us
we learned alot not to
litter or to not waste
water. When you came and
showed us the pictures it
made me sad to see our
planet like that. I do have't
to say that I littered
before and I didn't like it
But after what you taught
us and me I know how to
pick up trash now to make
the world a better place
and greener. Well thanks alot
hope to hear from you
again.

Sincerely,
Kimberly Flores

March 2, 2011

March 2, 2011

Dear Mrs. Koehler

Dear

Thank you for presenting
"Mojave River Watershed" for all students
in my grade. You are a great person
to teach me that.

You have taught me to pick up
after my pets. I do it now and I
will always do it. I've done it like
ten times.

I discovered protect the ocean
and planet. I never litter and I
never will. I always recycle too. I love
recycling because it is really fun.
You are a great person

Sincerely,
Santiago Ramirez

March 2, 2011

Dear Miss Koehler,

Thank you for giving us recycled money pencils and this is what I learned about help the earth. I learned to pick up after my pet, pick up litter, and recycle.

I know to pick up after my pet so nobody will step in their mess and get mad.

I also know to pick up litter. And on my lon people throw garbage so my mom and I pick it up.

In my house we have recycling bin where we throw bottles and cans. When it's time to turn them in we empty bottles if they have water and the water in plants. We also crush the cans. Thank you for coming and telling us to take care the earth

Sincerely,
Natalie Wright

APPENDIX F

Water Quality Management Plan (WQMP) and Post-Construction BMPs Guidance Manual



Mojave River Watershed Group Post-Construction Best Management Practice Guide

September 2010

Prepared By
Mojave River Watershed Group
County of San Bernardino
Town of Apple Valley
City of Victorville
City of Hesperia



Executive Summary

Throughout the United States, many rivers, creeks, streams, lakes, wetlands, and estuaries have become polluted or destabilized to the point where these waters no longer support their potential beneficial uses. A leading contributor to this water pollution is associated with urban areas and a growing population. Locally, the Mojave River Watershed has documented water quality problems, and has been designated a Priority Watershed.

The Mojave River Watershed Group (MRWG) member agencies, which include the cities of Hesperia and Victorville, the town of Apple Valley, and the urbanized areas of San Bernardino County, are covered by a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit requires the MRWG to reduce the discharge of pollutants to the Mojave River to the maximum extent practicable. This document, the ***Mojave River Watershed Group Post-Construction Best Management Practice Guide*** (Guide), is a key component of the MRWG's program to control the discharge of pollutants associated with new development and redevelopment.

The MRWG agencies require that priority development projects and projects that disturb one or more acres develop and implement a ***Water Quality Management Plan*** (WQMP). The WQMP is not a Storm Water Pollution Prevention Plan (SWPPP): a SWPPP is a plan for pollution prevention during construction. A WQMP is a plan that details the features that will be incorporated into a development project to reduce or eliminate the discharge of pollutants to receiving waters throughout the operational life of the project.

The WQMP must include ***Source Control*** and ***Site Design*** Best Management Practices (BMPs), and in some cases, ***Treatment Control*** BMPs. In order to be effective, BMPs must be operated and maintained throughout the life of the project: therefore, the WQMP must address BMP operation, maintenance, and funding in addition to providing BMP details.

This Guide provides directions on the selection of BMPs and the design of selected Site Design and Treatment Control BMPs. A template for preparing a WQMP is included in the Appendix.



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Water Quality – A National, State, and Local Concern

Many rivers, creeks, streams, lakes, wetlands, and estuaries have become polluted or impacted to the point where these water bodies can no longer be utilized or enjoyed to their maximum capabilities. In California, 779 water bodies have been identified as being impaired. Locally, the California Regional Water Quality Control Board – Lahontan Region has designated the Mojave River Watershed as a Priority Watershed. Priority Watersheds have documented water quality problems such as groundwater contamination and nutrients, excessive erosion and sedimentation, and pesticides in surface waters. The Mojave River Watershed is where the Town of Apple Valley, cities of Hesperia and Victorville, and the nearby unincorporated, urbanized areas of San Bernardino County discharge urban runoff.

The leading contributors to pollution of water bodies are generally associated with a growing population and the support of that growth. Specifically, urban areas, construction, industry, resource extraction, and agriculture are commonly identified sources of pollutants in water bodies. These pollutants are often transported in urban runoff.

Call to Action

To address this pollution, the United States Congress adopted the Clean Water Act, and the California Legislature adopted the Porter-Cologne Water Quality Act. These Acts empower the United States Environmental Protection Agency (USEPA) and California’s State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) to implement programs aimed at protection and restoration of water bodies, and to initiate civil and criminal actions against polluters.

Municipalities in the Mojave River Watershed Group (MRWG) area are required by the SWRCB and the RWQCB to reduce the discharge of pollutants to the Mojave River to the Maximum Extent Practicable (MEP). The MRWG area includes the town of Apple Valley, the cities of Hesperia and Victorville, and the nearby unincorporated, urbanized areas of San Bernardino County.



This *Mojave River Watershed Group Post-Construction Best Management Practice Guide* (Guide) provides guidance for the selection, sizing, and design of post-construction Best Management Practices (BMPs) for development projects in the MRWG area. Post-construction BMPs include structural and non-structural controls to be incorporated into development projects for the purpose of retaining or reducing the pollutants conveyed by urban runoff. The level of information in the Guide varies by the type of BMP and the availability of suitable sources of design guidance. For example, the Guide provides relatively detailed sizing and design guidance for some Treatment Control BMPs (e.g., Infiltration Basins), and essentially no design guidance on non-structural Source Control BMPs (e.g., Street and Parking Lot Sweeping).

Incorporation of post-construction BMPs into development projects is a key element of the MRWG's program to reduce the discharge of pollutants to the Mojave River to the MEP. While the MEP standard expresses flexibility in setting the requirements set forth in this Guide, the intent is that the requirements herein are to be applied as the minimum requirements for development projects.

BMP selection and sizing information in this Guide are based on fulfilling the requirements set forth in the following documents: the *National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004, Waste Discharge Requirements (WDRS) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (General Permit)*; and the *Storm Water Management Program (SWMP) for the Mojave River Watershed*. BMP design guidelines are based on procedures in use in other areas with adaptations to make them applicable in the MRWG area. The Guide has attempted to provide straight-forward information on selection, sizing, and design of post-construction BMPs within the MRWG area: however, it is not a substitute for the advice and counsel of a registered professional civil engineer with knowledge and experience in the selection, sizing, and design of post-construction BMPs while taking into account site specific conditions and agency requirements.



Requirements for Development Projects

The Regional Water Quality Control Board (RWQCB) requires that certain development projects prepare and implement the provisions contained in the Water Quality Management Plan (WQMP). The purpose of the WQMP is to document permanent control measures for pollutants of concern related to development projects. At a minimum, the WQMP must address a combination of Site Design, Source Control, and Treatment Control Best Management Practices (BMPs) that will be incorporated into the project to reduce the discharge of pollutants to receiving waters, and most importantly, to ensure that the project does not contribute to impairment of California's water resources.

Water Quality Management Plans

WQMPs are a cornerstone of the Mojave River Watershed Group's (MRWG's) program to control pollution in urban runoff from development projects. Certain development projects in the jurisdiction of a MRWG member agency will be required to prepare and to implement a project-specific WQMP. A project-specific WQMP must include BMPs that will be implemented to control the discharge of pollutants in urban runoff from the project.

Projects Requiring a WQMP

The checklist at the end of this Section is used to identify the projects that require a WQMP.

WQMP Submittals

MRWG agencies require two primary WQMP submittals; a Conceptual WQMP (C-WQMP) and a Final WQMP (F-WQMP).

The C-WQMP is to be submitted and approved prior to submittal of the development application. The purpose of the C-WQMP is to ensure that the potential water quality impacts of the project have been identified, that appropriate BMPs have been identified to mitigate the water quality impacts, and that the project can adequately integrate appropriate BMPs. While the

C-WQMP is conceptual, it provides the framework for approval of the project during planning, and serves as the guide for developing the F-WQMP.

The F-WQMP is to be submitted and approved prior to application for grading or building permits. The purpose of the F-WQMP is to provide details on the pollution controls to be integrated into the project. The F-WQMP must be consistent with the approved C-WQMP, and in full conformance with this Guide and MRWG agency requirements. Significant changes between the C-WQMP and the F-WQMP could necessitate another pass through the project planning approval process, and should be avoided.

WQMP Template

A template for preparing a WQMP is provided in Appendix F. The MRWG-WQMP Template is intended to be used in conjunction with this Guide.



CHECKLIST TO IDENTIFY PROJECTS REQUIRING A WQMP IN THE MRWG AREA			
PROPOSED PROJECT CONSISTS OF OR INCLUDES:		YES	NO
<p>Is the Project a discretionary new development or redevelopment consisting of a Single-Family Hillside Residence?</p> <p>Hillside means property located in an area with known erosion soil conditions, where the development contemplates grading on any natural slope that is twenty-five percent or greater.</p>			
<p>Is the Project a discretionary new development or redevelopment consisting of a Commercial Development that creates at least 100,000 square feet of impermeable area, including parking areas?</p> <p>Commercial development means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, multi-apartment buildings, car wash facilities, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.</p>			
<p>Is the Project a discretionary new development or redevelopment consisting of a Automotive Repair Shop(s)?</p> <p>Automotive Repair Shop means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.</p>			
<p>Is the Project a discretionary new development or redevelopment consisting of a Retail Gasoline Outlet(s)?</p> <p>Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.</p>			
<p>Is the Project a discretionary new development or redevelopment consisting of a Restaurant(s)?</p> <p>Restaurant means a stand-alone 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).</p>			
<p>Is the Project a discretionary development or redevelopment consisting of a Home Subdivision with 10 or more housing units?</p>			
<p>Is the Project a discretionary new development or redevelopment consisting of Parking Lot(s) 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff?</p> <p>Parking Lot means land area or facility for the temporary parking or storage of motor vehicles used personally, for business or for commerce with a lot size of 5,000 square feet or more, or with 25 or more parking spaces.</p>			
<p>Is the Project a new development or redevelopment project that disturbs greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale and that discharges into the Municipal Separate Storm Sewer System (MS4)?</p>			
<p>If ANY question above is answered YES, then the project requires preparation of a WQMP. If ALL questions above are answered NO, then the project does not require a WQMP.</p>		Is a WQMP Required?	YES NO
<p>Definitions: Discretionary Project means a project which requires the exercise of judgment or deliberation when the public agency or public body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations. Priority Project means development and redevelopment projects that include any feature that meets or exceeds one or more of the thresholds described above for Single-Family Hillside Residence, Commercial Development, Automotive Repair Shop, Retail Gasoline Outlet, Restaurant, Home Subdivision, or Parking Lot. New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision. Redevelopment means, on an already developed site, the creation or addition of at least 5,000 square feet of impervious area. Redevelopment includes, but is not limited to: the expansion of a building footprint or addition of a structure; structural development including an increase in gross floor area and/ or exterior construction or remodeling; and land disturbing activities related with structural or impervious surfaces. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to these Design Standards, the Design Standards apply only to the addition, and not to the entire development.</p>			



Best Management Practices

Mojave River Watershed Group (MRWG) agencies require that all development projects that call for a Water Quality Management Plan (WQMP) implement Source Control, Site Design, and Treatment Control Best Management Practices (BMPs). Section 2 of this Guide shows how to identify which development projects require a WQMP. This Section of the Guide provides a general description of Source Control, Site Design, and Treatment Control BMPs. Section 5 of this Guide shows how to identify the BMPs required for development projects.

Source Control BMPs include measures to reduce the amount of pollutants on the site and measures that eliminate or reduce the potential for rainfall, urban runoff, and pollutants from coming into contact with one another. Examples of Source Control BMPs include:

- Structural measures such as covered storage areas (See photo below)
- Management practices such as regular parking lot sweeping
- Non-structural measures such as restrictions on polluting activities



Site Design BMPs include practices that minimize the difference between the pre- and post-development hydrographs. Site Design entails minimizing the creation of runoff and enhancing opportunities for infiltration to offset the increase in runoff volumes and rates of flow caused by the creation of impervious surfaces. By minimizing changes in the runoff hydrograph, the transport mechanism for pollutants is controlled, and the size of treatment controls is reduced. Examples of Site Design BMPs include:

- Pervious pavers and/or pavements in parking lots (See photo below)
- Landscaped areas configured to convey runoff from impervious surfaces
- Landscaping in lieu of impervious surfaces



Treatment Control BMPs include natural and engineered systems designed to capture and treat the adverse affects of urban runoff. Treatment control BMPs remove pollutants from runoff through a combination of physical, chemical, and biological processes. Examples of Treatment Control BMPs include:

- Extended Detention Basin
- Infiltration (Retention) Basin
- Infiltration Trench and Subterranean Infiltration
- Bioretention (See photo below)
- Vegetated Swales
- Vegetated Filter Strips
- Manufactured Products



Combination BMPs include BMPs that can serve dual roles, functioning simultaneously as a Site Design BMP and a Treatment Control BMP. The distinction is that Combination BMPs will reduce runoff from rainfall falling directly on the BMP in addition to treating runoff from adjacent areas. Examples of BMPs that can often serve in a dual role include:

- Pervious Pavement
- Bioretention
- Vegetated Filter Strip
- Infiltration Basin (See photo below)



BMP Treatment Trains consist of multiple BMPs deployed in series so that runoff flowing into the first BMP discharges into a second BMP and so on. BMP Treatment Trains are deployed to increase treatment effectiveness, to treat a wider range of pollutants, and to protect sensitive BMPs. In some deployment configurations, the first BMP in a treatment train may be referred to as a pretreatment BMP. Examples of BMP treatment trains include:

- Vegetated Filter Strip (pretreatment) followed by an Infiltration Trench
- Manufactured Product (pretreatment) followed by Bioretention (See photo below)





Future Home of Low Impact Development Guidance



Integration of BMPs into Development Projects

Strategies for integration of Source Control, Site Design, and Treatment Control Best Management Practices (BMPs) into development projects are described in the following reference documents:

- ***Stormwater Best Management Practice Handbook – New Development and Redevelopment***, California Stormwater Quality Association, January 2003.
<http://www.cabmphandbooks.com/Development.asp>
(URL Verified September 2010)
- ***Start at the Source – Design Guidance Manual for Stormwater Quality Protection***, Bay Area Stormwater Management Agencies Association, 1999.
<http://www.scvurppp-w2k.com/pdfs/0910/StartAtTheSource.pdf>
(URL verified September 2010)
- ***Using Site Design Techniques to Meet Development Standards for Stormwater Quality***, Bay Area Stormwater Management Agencies Association, May 2003.
http://www.scvurppp-w2k.com/pdfs/0203/using_sas-0503.pdf
(URL verified September 2010)

These reference documents provide general guidance. The general guidance in the reference documents is superseded by the requirements of the Mojave River Watershed Group (MRWG) agencies set forth in this Guide, project-specific conditions of approval, and MRWG agency specific requirements, policies, codes, and practices.

BMPs Required for Development Projects

The flowchart located at the end of this Section is utilized to associate the projects requiring a WQMP with the categories of post-construction BMPs that must be described in the WQMP and included in the design of the project.



The flowchart reveals notable **exemptions** that have been incorporated into the MRWG's program for water quality control for development projects:

- **Small Project Exemption** – Projects that disturb less than 1 acre and are not a part of a larger plan of development, and are not a discretionary Priority Project (See Section 2), are not required to prepare a WQMP or to implement Site Design, Source Control, or Treatment Control BMPs.
- **Low Risk Project Exemption** – Discretionary projects that are not Priority Projects (See Section 2), and that disturb less than 1 acre and are not a part of a larger plan of development, are not required to prepare a WQMP or to implement Site Design, Source Control, or Treatment Control BMPs.
- **Site Design BMP Exemption** – Projects that are required to prepare a WQMP and that are subject to a requirement for on-site retention of storm water runoff for flood control or other non-water quality purpose, when said retention requirement equals or exceeds the water quality design volume (See Section 7), are exempt from requirements for Site Design BMPs.
- **Treatment Control BMP Exemption** – Projects that are required to prepare a WQMP, and that qualify for the ***Site Design BMP Exemption*** or that implement Site Design BMPs sufficient to retain 100% or more of the water quality design volume (See Section 7), are exempt from requirements for Treatment Control BMPs.

The flowchart also reveals notable and fundamental requirements of the MRWG's program for water quality control for development projects:

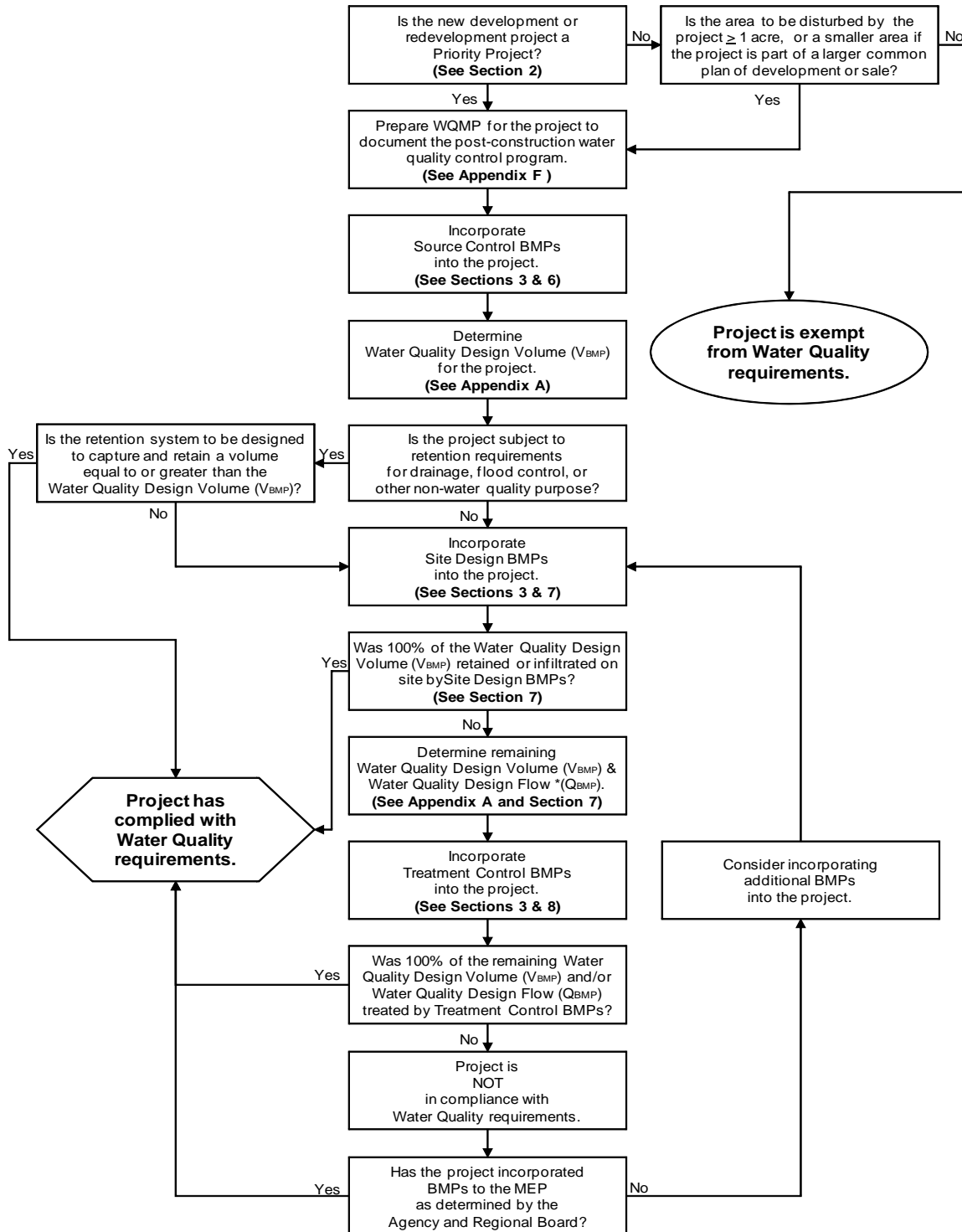
- **Requirements for WQMPs** – Projects deemed to pose a potential risk to water quality, based on the anticipated land use and/or size of the project (See Section 2), are required to prepare and to implement a WQMP.

- **Requirements for Source Control BMPs** – All projects required to prepare a WQMP must include applicable and appropriate Source Control BMPs (See Section 6).
- **Requirements for Site Design BMPs** – All projects required to prepare a WQMP must include Site Design BMPs unless eligible for the ***Site Design BMP Exemption*** triggered by retention requirements for flood control or other non-water quality related requirements (See Section 7).
- **Requirements for Treatment Control BMPs** – All projects required to prepare a WQMP must include Treatment Control BMPs unless eligible for either the ***Site Design BMP Exemption*** triggered by retention requirements for flood control or other non-water quality related requirements or the ***Treatment Control BMP Exemption*** triggered by implementing Site Design BMPs sufficient to retain on site 100% of the water quality design volume (See Section 7).

Once it is determined that a WQMP will be prepared for a project and after the general BMP categories (Source Control, Site Design, and Treatment Control) for the project have been identified, the next step is to identify specific BMPs in each category to incorporate into project (See Sections 6, 7, and 8).



Flowchart for Identification of Required BMP Categories



Source Control BMPs

For projects that require Source Control Best Management Practices (BMPs) (See Section 5), the requirement is to include appropriate Source Control BMPs applicable to corresponding project features. For example, Storm Drain Stenciling and Signage is a Source Control BMP and is to be included in the Water Quality Management Plan (WQMP) for all projects that have storm drain inlets.

Source Control BMPs require on-going maintenance to remain effective. The WQMP must include a Source Control BMP maintenance plan and a commitment to fund and implement the maintenance plan.

There are Source Control BMPs applicable to all projects with corresponding project features, and there are additional Source Control BMPs applicable to Priority Projects with corresponding project features. Source Control BMPs include both structural and non-structural practices.

Source Control BMPs Applicable to All Projects

Minimize Storm Water Pollutants of Concern

The development must be designed, operated, and maintained to minimize, to the maximum extent practicable (MEP), the introduction of pollutants to runoff from the project site that reaches receiving waters or an off-site storm water conveyance system.

Minimizing the introduction of pollutants requires the incorporation of a BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in runoff from the project site to the MEP. The BMPs suited for this purpose include those listed in this Guide, the California Storm Water Best Management Practice Handbooks (CASQA 2003), and USEPA Report No. EPA-840-B-92-002. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

Protect Slopes and Channels

Project plans must include BMPs consistent with local codes, ordinances, or other regulatory mechanism to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

- 1) Convey runoff safely from the tops of slopes.
- 2) Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies with jurisdiction (e.g., U.S. Army Corps of Engineers and the California Department of Fish and Game).
- 3) Utilize natural drainage systems to the MEP.
- 4) Stabilize permanent channel crossings.
- 5) Stabilize and protect slopes from erosion by:
 - a. Covering slopes with rock blankets or other equally effective mechanical soil stabilization system.
 - b. Landscaping slopes using native and/or drought tolerant vegetation.
 - c. Landscaping slopes with ornamental vegetation where a suitable supply of irrigation water is available.

Provide Storm Drain System Stenciling and Signage

Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message.

All storm drain inlets and catch basins within the project limits must be stenciled with prohibitive language (such as: "NO DUMPING – DRAINS TO MOJAVE RIVER") and/or graphical icons to discourage illegal dumping. Signs and prohibitive language and/or graphical icons which prohibit illegal dumping must be posted at public access points along channels, washes,



and creeks within the project limits. All stencil and signage materials, verbiage, icons, and placement shall be as approved by the Mojave River Watershed Group (MRWG) agency approving the WQMP for the project. Legibility of stencils and signs must be maintained.

Properly Design Outdoor Material Storage Areas

Outdoor material storage areas refer to storage areas or storage facilities for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system, the following structural Source Control BMPs are required:

1. Materials with the potential to contaminate storm water must be:
 - a. Placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or
 - b. Protected by secondary containment structures such as berms, dikes, or curbs.
2. The storage area must be paved and sufficiently impervious to contain leaks and spills.
3. The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

Properly Design Trash Storage Areas

A trash storage area refers to an area where a trash receptacle or receptacles (dumpsters) are located for use as a repository for solid wastes. Loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. All trash container areas must implement the following structural Source Control BMPs (individual single family residences are exempt from these requirements):

- 1) Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
- 2) Trash container areas must be screened or walled to prevent off-site transport of trash.
- 3) Trash storage containers must have covers that prevent entry of rain or removal of debris by wind, and the covers must remain closed at all times except when trash is being placed into the container or the container is being emptied. Alternatively, the trash container enclosure may have a roof and sides that effectively prevent the entry of rain or removal of debris by wind.

Source Control BMPs Applicable to Commercial Development Priority Projects

Properly Design Loading/Unloading Dock Areas

Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

- 1) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
- 2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

Properly Design Repair/Maintenance Bays

Oil and grease, solvents, car battery acid, coolant, and gasoline from repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Design plans for repair bays must include the following:

- 1) Repair/maintenance bays must be indoors or designed in such a way that doesn't allow storm water runoff or contact with storm water runoff.

- 2) Design the repair/maintenance bay drainage system to capture all washwater, leaks, and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by the local jurisdiction, obtain an Industrial Waste Discharge Permit.

Properly Design Vehicle/Equipment Wash Areas

The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Developments that do not specifically prohibit vehicle/equipment washing/steam cleaning through activity restrictions must include a specific area for these activities. The area specified for vehicle/equipment washing/steam cleaning must be:

- 1) Self-contained and/ or covered, and equipped with a clarifier or other pretreatment facility.
- 2) Properly connected to a sanitary sewer or other appropriately permitted disposal facility.

Source Control BMPs Applicable to Restaurant Priority Projects

Properly Design Equipment/Accessory Wash Areas

The activity of outdoor equipment/accessory washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Restaurants must include a specific area for equipment/accessory washing/steam cleaning. The area specified for equipment/accessory washing/steam cleaning must be:

- 1) Self-contained, equipped with a grease trap, and properly connected to a sanitary sewer.
- 2) Covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility if located outdoors.

Source Control BMPs Applicable to Retail Gasoline Outlet Priority Projects

Properly Design Fueling Area

Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant, and gasoline to the storm water conveyance system. The design of the fueling area must incorporate the following features:

- 1) The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy's minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.
- 2) The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete in the fuel dispensing area is prohibited.
- 3) The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents runoff of storm water to the extent practicable.
- 4) At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

Source Control BMPs Applicable to Automotive Repair Shop Priority Projects

Properly Design Fueling Area

Same as requirements for Retail Gasoline Outlet Priority Projects.

Properly Design Repair/Maintenance Bays

Same as requirements for Commercial Development Priority Projects.



Properly Design Vehicle/Equipment Wash Areas

Same as requirements for Commercial Development Priority Projects.

Properly Design Loading/Unloading Dock Areas

Same as requirements for Commercial Development Priority Projects.

**Source Control BMPs Applicable to Parking Lot Priority
Projects**

Properly Design Parking Area

Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor vehicles. These pollutants are easily mobilized by rainfall runoff and transported to storm drains and to receiving waters. To minimize the off-site transport of pollutants, the following design criteria are required:

- 1) Reduce impervious land coverage of parking areas.
- 2) Reduce parking lot runoff by utilizing pervious surfaces such as pervious pavers or pervious Portland cement concrete. Studies indicate that oil and grease that enter these pervious parking surfaces biodegrade and are unlikely to cause contamination with reasonable, normal levels of automotive drips in parking areas.

**Properly Design To Limit Oil Contamination and Perform
Maintenance**

Parking lots may accumulate oil, grease, and water insoluble hydrocarbons from vehicle drippings and engine system leaks:

- 1) Treat to remove oil and petroleum hydrocarbons in runoff from parking lots that are heavily used (e.g. fast food outlets, lots with 25 or more parking spaces, sports event parking lots, shopping malls, grocery stores, discount warehouse stores). See Section 8 for Treatment Control BMPs.

- 2) Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control. See Section 8 for Treatment Control BMPs.



Site Design BMPs

For projects that require Site Design Best Management Practices (BMPs) (See Section 5), the requirement is to include appropriate Site Design BMPs to the extent feasible to meet the following goals:

- **Site Design Goal 1** – Post development peak storm water runoff discharge rates shall not exceed the pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion.
- **Site Design Goal 2** – Retain or infiltrate on site the Water Quality Design Volume (V_{BMP}) for the development.

The approach to meeting **Site Design Goal 1** is summarized below.

1. First, minimize the creation of runoff by minimizing development of impervious surfaces.
2. Then, minimize the discharge of runoff by retaining runoff on site by routing runoff to pervious areas such as landscaping, through use of “Zero Discharge Areas,” and other retention BMPs. Zero Discharge Areas are typically small impressions created throughout the site to store localized runoff. Retained runoff will need to be “disposed” through the processes of infiltration, evaporation, evapotranspiration, reuse or a combination thereof. Reuse of retained discharges for irrigation or other non-potable uses is potentially a valuable approach in the arid Mojave River Watershed.
3. Next, plan site drainage to maximize the time of concentration. This is accomplished by slowing down runoff by flattening slopes and increasing the relative roughness of the flow path, and by increasing the distance runoff must travel.
4. Finally, temporarily detain remaining runoff and then release it gradually over time at rates that do not exceed the pre-development rate.



Site Design Goal 1 is met when peak post-development discharge rates do not exceed the pre-development peak discharge rates for the storm events of concern. The storm events to be considered when working towards meeting Site Design Goal 1 are ideally based on the findings of an evaluation and study of the specific downstream sensitive receiving water. Absent an available study and any requirement to prepare such a study, the default storm events for the peak discharge evaluation shall be the 1-year, 2-year, and 5-year frequency events using the methods in the San Bernardino County Hydrology Manual (1986).

The approach to meeting *Site Design Goal 2* is summarized below.

1. First, minimize the creation of runoff by minimizing development of impervious surfaces.
2. Then, minimize the discharge of runoff by retaining runoff on site by routing runoff to pervious areas such as landscaping, through use of "Zero Discharge Areas," and other retention BMPs. Zero Discharge Areas are typically small impressions created throughout the site to store localized runoff. Retained runoff will need to be "disposed" through the processes of infiltration, evaporation, evapotranspiration, reuse or a combination thereof. Reuse of retained discharges for irrigation or other non-potable uses is potentially a valuable approach in the arid Mojave River Watershed.

Site Design Goal 2 is fully met when 100% of the Water Quality Design Volume (V_{BMP}) is retained on site. Gauging progress towards meeting Site Design Goal 2 is accomplished through the following procedure.

1. Calculate the following values for the development:
 - a. Water Quality Design Volume using the procedure in Appendix A. ($V_{BMP} = \underline{\hspace{2cm}}$).
 - b. The volume of runoff that can be captured and retained on site. ($V_{CAPACITY} = \underline{\hspace{2cm}}$).
 - c. The volume of runoff retention capacity that can be restored within a 48 hour period, assuming no rain falls during this 48 hour period. This volume will always be less than or equal to $V_{CAPACITY}$. ($V_{RESTORED} = \underline{\hspace{2cm}}$).



2. Determine the effective retention capacity.
 - a. The effective retention capacity is the lesser of $V_{CAPACITY}$ and $V_{RESTORED}$. ($V_{EFFECTIVE} = \underline{\hspace{2cm}}$).
3. Compare V_{BMP} to $V_{EFFECTIVE}$.
 - a. If $V_{BMP} \leq V_{EFFECTIVE}$, then Site Design Goal 2 is fully met. Sufficient site design BMPs have been implemented and Treatment Control BMPs are not required. End evaluation.
 - b. If $V_{BMP} \geq V_{EFFECTIVE}$, then Site Design Goal 2 is not met or is partially met. Sufficient site design BMPs may not have been implemented. Continue evaluation.
4. Re-evaluate development design to identify additional opportunities to prevent the creation of runoff and to retain runoff on site.
5. Repeat Steps 1-4 until:
 - a. $V_{BMP} \leq V_{EFFECTIVE}$. The Site Design Goal is fully met. End evaluation.
 - b. All feasible Site Design BMPs that prevent creation of runoff and that retain runoff on site have been implemented. Treatment Control BMPs (See Section 8) are required to treat runoff not addressed by Site Design BMPs. Continue evaluation to determine the design criteria for Treatment Control BMPs.
6. Calculate the following values for the development:
 - a. Water Quality Design Volume remaining after implementation of Site Design BMPs.
 - i. $V_{BMP \text{ REMAINING}} = V_{BMP} - V_{EFFECTIVE}$. ($V_{BMP \text{ REMAINING}} = \underline{\hspace{2cm}}$).
 - b. Water Quality Design Flow using the procedure in Appendix A. ($Q_{BMP} = \underline{\hspace{2cm}}$).
 - c. Treatment BMP design criteria adjusted to represent the success in implementing Site Design BMPs.
 - i. $V_{BMP \text{ ADJUSTED}} = V_{BMP \text{ REMAINING}}$. ($V_{BMP \text{ ADJUSTED}} = \underline{\hspace{2cm}}$)
 - ii. $Q_{BMP \text{ ADJUSTED}} = (V_{BMP \text{ REMAINING}} \div V_{BMP}) \times (Q_{BMP})$. ($Q_{BMP \text{ ADJUSTED}} = \underline{\hspace{2cm}}$).
7. Implement Treatment Control BMPs (See Section 8) that treat $V_{BMP \text{ ADJUSTED}}$ and/or $Q_{BMP \text{ ADJUSTED}}$.



Site Design BMPs Applicable to All Projects

All projects shall implement appropriate and feasible Site Design BMPs to meet Site Design BMP Goal 1 and Goal 2.

Minimize Creation of Runoff

The development of impervious surfaces on a site will create runoff that may: increase the difference between the pre- and post-development hydrographs, potentially destabilizing downstream channels; decrease the replenishment of groundwater; convey pollutants to storm drains and receiving waters; and increase the size of treatment controls. Site Design BMPs that provide opportunities for reducing the imperviousness and creation of runoff at the site include:

- **Conserve Natural Areas and Create Open Spaces** consistent with applicable General Plan and Local Area Plan policies.
 - **Concentrate or Cluster Development** on portions of the site while leaving the remaining land in a natural undisturbed condition. This includes:
 - Multi-story buildings in lieu of single-story buildings of similar floor area.
 - Narrow streets and walkways.
 - Shared driveways.
 - **Limit Clearing and Grading of Native Vegetation** to the minimum amount needed to build lots, allow access, and provide fire protection.
 - **Promote Use of Natural Vegetation** in parking lot islands and other landscaped areas.
 - **Maximize Effectiveness of Trees and other Vegetation** by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
 - **Preserve Riparian Areas and Wetlands.**
 - **Create Self Treating Areas.** Self Treating Areas are hydrologically isolated landscape and open space areas which effectively serve as their own treatment BMP. To be hydrologically isolated, a landscape or open space area must not receive runoff from adjacent impervious surface areas. Self Treating Areas must have a runoff coefficient equal to or less



than the pre-development runoff coefficient, and must discharge without co-mingling with other site runoff before the point of discharge from the site. Nominal inclusive impermeable surfaces totaling less than or equal to 5% of the Self Treating Area may be included within the Self Treating Area subject to the following conditions: a permeable alternative surface is infeasible; runoff from the impermeable surface is directed onto permeable surfaces; the use of the impermeable surface is unlikely to be a significant source of pollutants; and the combined runoff coefficient requirement is met. A solid shade/rain cover over a picnic bench is an example of an inclusive impervious surface.

- **Use Permeable Surfaces in lieu of Impermeable Surfaces.**
 - Utilize permeable surfaces in parking lots, drive aisles, walkways, patios, and other impervious surfaces. Substitutes for impermeable surfaces include:
 - Paving stones with integrated openings and/or joints designed to allow infiltration.
 - Permeable Portland cement concrete and permeable asphaltic concrete (AC).
 - Gravel surfaces.
 - Vegetated surfaces.
 - Composite permeable pavements, often made of ground recycled rubber, glass, and other materials bound with adhesives to create a permeable surface.

Minimize the Discharge of Runoff

Runoff discharges from a site become a transport mechanism for urban pollutants, conveying these pollutants into storm drains and ultimately into receiving waters where pollutants may have a detrimental effect on beneficial uses. Site Design BMPs that provide opportunities to minimize the discharge of runoff from a site include:

- **Retain Runoff On Site**
 - Comply with **Local Retention Requirements** for drainage and other non-water quality reasons. Meeting such retention requirements will usually meet the retention goals for water quality, thus providing multiple benefits.



- Create **Zero Discharge Areas** to retain localized runoff in small, shallow depressions throughout the site.
 - Integrate **Bioretention Areas** into the landscape design to retain runoff from adjacent impervious surfaces.
 - Integrate surface **Infiltration Basins** into the site design. Where safe, feasible, and consistent with local requirements, design Infiltration Basins to achieve other beneficial uses such as open space, landscaping, or recreational areas.
 - Incorporate sub-surface **Infiltration Galleries** into the site design where the surface areas above the Infiltration Galleries provide for beneficial uses such as open space, landscaping, or recreational areas. Infiltration Galleries under paved surfaces such as parking lots or storage lots shall be considered to be a Treatment Control BMP.
 - Incorporate into the site design **Capture and Reuse** facilities that provide for the storage and beneficial reuse of runoff for non-potable purposes such as irrigation.
- **Direct Runoff to Pervious Areas**
- **Disconnect Impervious Areas** by directing runoff to pervious areas where runoff will have an opportunity to infiltrate before discharge. Pervious areas include landscape areas, open space, permeable paving, and other similar permeable surfaces.
 - Direct sheet flow runoff to **Infiltration Trenches** located within or adjacent to impervious surfaces.

Site Design BMPs that retain runoff must be designed to restore their assimilative capacity within 48 hours through the processes of infiltration, evaporation, transpiration, or reuse.

Maximize the Time of Concentration

Increasing a site's time of concentration slows down runoff, increasing opportunities for infiltration and reducing peak flows. Site Design BMPs to increase a site's time of concentration include:

- **Flatten the Relative Slope of the Drainage System** by increasing the distance flows must travel.



- Use surface features such as **Permeable Swales** to meander runoff through the site before reaching the point of discharge in lieu of point-to-point underground pipe systems. Permeable Swales must be stable, which can be accomplished through landscaping with dry rock or vegetation based on aesthetics. Even impermeable swales can help flatten the relative slope, but may not maximize other potential water quality benefits.
- **Increase the Relative Roughness of the Runoff Flow Path**
 - In lieu of smooth-surfaced swales, channels, or pipes to convey flows, **Utilize Rough Conveyance Surfaces**. Rough surfaces slow down and spread out flows, increasing flow times. If the surface is permeable, the decreased velocities and spread out flows will have more opportunity to infiltrate. Manning's Roughness Coefficients ("n" values) may be used to evaluate the relative roughness of various surfaces. Make sure the roughness coefficients used in the evaluation are adjusted based on depth of flow. As examples, a concrete, a loose rock riprap, and a vegetated swale flowing 4 inches deep and having similar cross sections could have "n" values of 0.015, 0.104, and 0.24, respectively. These rougher surfaces translate into velocities reduced to roughly 14% for the rock riprap swale and 6% for the vegetated swale when compared to the velocity in the concrete swale. Remember, for conveyances with the same cross section, a rougher surface will reduce velocities which in turn decreases the capacity of the conveyance. This means the cross section of the rough channel will need to be increased to accommodate the same flow as the smooth-surfaced channel. The increased cross section usually provides more wetted perimeter, providing the spread out flows more opportunity to infiltrate.
 - **Encourage Sheet Flow**. In sheet flow, the depth of runoff is small compared to the relative roughness of the surfaces, and slows the velocity of runoff.

Detain Runoff and Release Gradually Over Time

The development of impervious surfaces, changing the landform through grading, and development of engineered drainage systems on a site historically have had the combined effect of increasing the peak post-



development runoff rates compared to the pre-development peak runoff rates. These higher peak runoff rates can exceed the capacity of downstream conveyance systems and result in flooding, the need for expensive capacity improvements, destabilization (erosion), and impacts to habitat. When increases in peak flows cannot be prevented through other Site Design BMPs, then the increased peak flows can be mitigated through traditional detention. Site Design BMPs to mitigate peak flows include:

- **Detain Runoff and Release Gradually Over Time**
 - Integrate surface **Detention Basins** into the site design. Where safe, feasible, and consistent with local requirements, design Detention Basins to achieve other beneficial uses such as open space, landscaping, recreational uses, or overflow parking.
 - Incorporate sub-surface **Detention Galleries** into the site design where surface areas above the Detention Galleries provide for beneficial uses such as open space, landscaping, or recreational areas.

Detention Basins for mitigating peak flows for water quality purposes will usually fit within the footprint of larger facilities used for flood control purposes, and can share the same storage volumes if allowed by the local agency. Typically, Detention Basins for mitigating peak flows for water quality purposes will require changes to the outlet structure used for flood control. These changes are generally relatively simple, and usually require a staged outlet design.

Treatment Control BMPs

For projects that have exhausted all feasible opportunities to incorporate Site Design Best Management Practices (BMPs) into the project sufficient to retain 100 percent of the Water Quality Design Volume (V_{BMP}) on site (See Section 7), the requirement is to implement Treatment Control BMPs to address the adjusted Water Quality Design Volume ($V_{BMP \text{ ADJUSTED}}$), the adjusted Water Design Flow ($Q_{BMP \text{ ADJUSTED}}$), or both. The adjusted values of the Water Quality Design Volume and Water Quality Design Flow represent the treatment requirement taking into account the success of implementing the preferred Site Design BMPs. The procedure for determining the adjusted Water Quality Design Volume and Water Quality Design Flow for use in sizing Treatment Control BMPs is found in Section 7.

Selection of Treatment Control BMPs

Treatment Control BMPs shall be selected to eliminate or reduce the pollutants potentially generated by the site to a level consistent with the objective of protecting receiving waters. Treatment Control BMP selection is accomplished in four steps:

1. Identify Potential Project Pollutants
2. Identify Pollutants Impairing Receiving Waters
3. Identify Pollutants of Concern for the Project
4. Identify Treatment Control BMPs

Step 1 - Identify Potential Project Pollutants

The pollutants potentially generated by a site are determined based on the site's general land use and special activities conducted at the site. Pollutants based on land use are determined using the Land Use and Pollutants Table at the end of this section.

To use the Land Use and Pollutants Table, identify the general land use and all specific land uses and land use features in the table that correspond to



the project. The potential pollutants for the project will be all potential pollutants associated with any general land use, specific land uses, and land use features of the project. For example, a commercial site is not expected to generate Organic Compounds as a pollutant. However, if the commercial site has a parking lot, and since parking lots have Organic Pollutants as potential pollutants, then the combined commercial project with a parking lot will have Organic Compounds as potential pollutants in runoff. This additive distinction is important because it might provide reason to segregate areas of the project into drainage areas by potential pollutants so that Treatment Control BMPs can be focused on the specific needs of the drainage area. For example, treating for bacteria is expensive. While bacteria are a potential pollutant in runoff from parking lots, it is not a potential pollutant from industrial facilities such as transfer warehouses that do not involve animals or animal wastes. For warehouse projects, it might be most economical to reserve the more robust (and expensive) bacteria Treatment Control BMPs for the parking lot and use less robust (and less expensive) Treatment Control BMPs for treating the runoff from the rooftops. This scenario would require that the rooftop and parking lot runoff not be co-mingled before treatment.

Site specific activities and land uses may expand the list of potential pollutants in runoff from the list generated using the Land Use and Pollutants Table. Potential pollutants in runoff due to site specific activities and land uses are determined based on an evaluation of the proposed project, with special emphasis on activities and land uses that will occur outdoors. For example, an industrial project that consists of a concrete batch plant would add the potential pollutant (actually, a condition) of "High pH" to the list of potential pollutants for the project. In addition, a batch plant project would allow the potential pollutant of "Sediment" to be subdivided into coarse sediments that readily settle and fine sediments that stay suspended for long periods and creating "Turbidity." The expectation in the Mojave River Watershed Group (MRWG) area is that potential pollutants from site specific activities and land uses over and above those identified using the Land Use and Pollutants Table will be addressed through a combination of aggressive structural and non-structural Source Control BMPs, coupled with more robust Treatment Control BMPs when necessary.



Step 2 - Identify Pollutants Impairing Receiving Waters

Impaired receiving waters and the stressors (e.g., pollutants such as Sediment and Nutrients, or conditions such as High/Low pH or Temperature) are identified using the State Water Resources Control Board (SWRCB) and United States Environmental Protection Agency (USEPA) approved "Clean Water Act Section 303 (d) List of Water Quality Limited Segments." The most current 303(d) list can be found on the SWRCB web site.

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists_2006/epa/state_usepa_combined.pdf

(URL verified September 2010)

When downloading the 303(d) list, make sure to download the complete list covering water quality limited segments requiring Total Maximum Daily Loads (TMDLs), those being addressed by USEPA approved TMDLs, and those being addressed by actions other than TMDLs.

Review the 303(d) list to see if the project's downstream receiving waters are on the list. For the MRWG area, this will require scanning the 303(d) list for "Region 6" which corresponds to the Lahontan Regional Water Quality Control Board (RWQCB) which includes the MRWG area. If the project's downstream receiving waters are on the list, scan across the list to the column labeled "Pollutant/Stressor." The information in this column identifies the pollutant(s) or condition(s) impairing (stressing) the downstream receiving water. If the project's downstream receiving waters are not on the list, then that is usually good news.

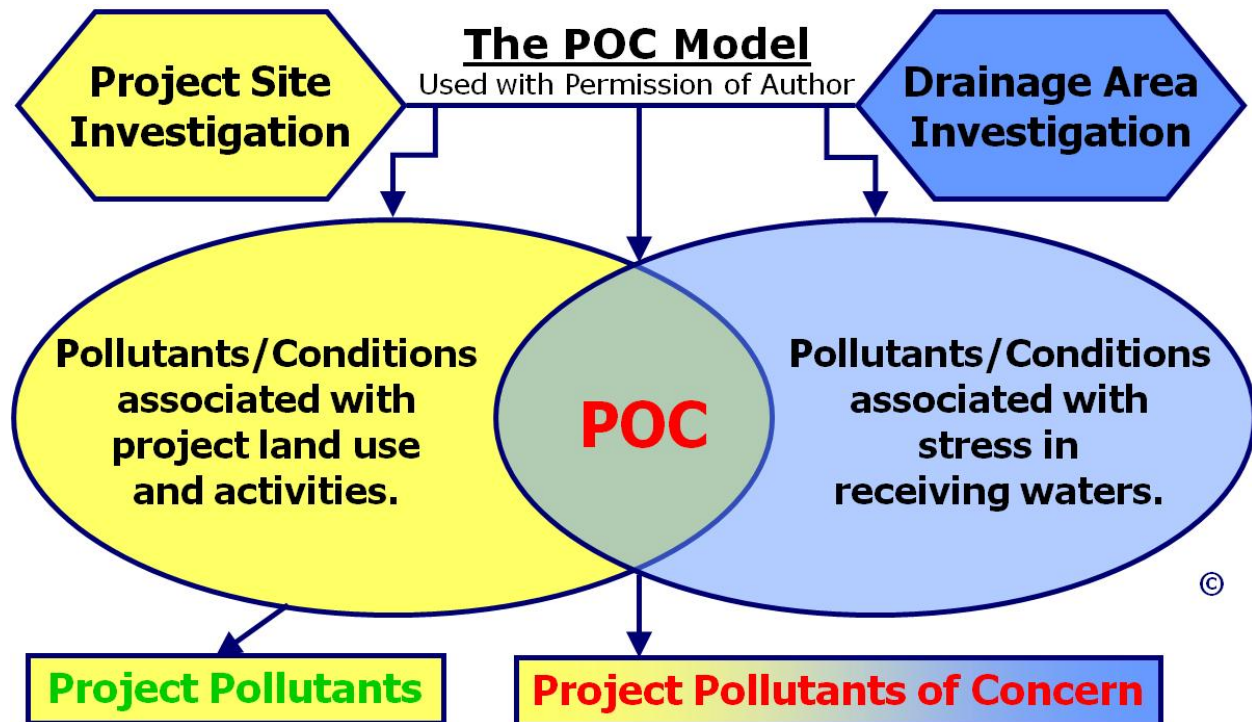
There may be local concerns regarding the project's downstream receiving waters that have not been elevated to the current 303(d) list. These issues, which may have been raised by the Lahontan RWQCB, a city or town, the county, a federal agency, or a Non-Governmental Organization (NGO), should be considered when identifying pollutants and conditions important to protection of receiving waters.

Step 3 - Identify Pollutants of Concern for the Project

Project Pollutants of Concern (POCs) include those potential project pollutants/conditions (See Step 1) that are the same as those pollutants/conditions impairing receiving waters (See Step 2). The POC



Modelⁱ shows the relationship between potential project pollutants/conditions, pollutants/conditions impairing downstream receiving waters, and project POCs.



Step 4 - Identify Treatment Control BMPs

Treatment Control BMPs must be selected to address both Project Pollutants and Project Pollutants of Concern (POCs). The document, *Treatment BMP Technology Report* (Caltrans, CTSW-RT-09-239.06, April 2010) (Caltrans Report), shall be used for evaluating Treatment Control BMPs. The Caltrans Report is available at the following address:

<http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-09-239-06.pdf>
(URL verified September 2010)

Treatment Control BMPs that are not listed in the Caltrans Report, but utilize treatment processes and loading rates substantially similar to Treatment Control BMPs listed in the report, may, with approval of the MRWG agency,





use the ratings in the Caltrans Report to estimate the ratings for the unlisted Treatment Control BMP.

Project Pollutants must be addressed with site appropriate BMPs that have a removal efficiency that is statistically significant or expected to be based on professional judgment for each Project Pollutant.

Using the Caltrans Report, acceptable Treatment Control BMPs for Project Pollutants are those listed in Appendix B with a “✓” and those in Appendix C with a removal efficiency of low, medium, or high adjacent to each Project Pollutant. If a particular BMP does not address all Project Pollutants, then a treatment train approach may be needed. In a treatment train, Treatment Control BMPs are deployed in series to address all Project Pollutants.

**Caltrans Report Appendix B
Example BMP Performance Table
Use for “Project Pollutants”**

Constituent Group	Removal*
<i>Total Suspended Solids (TSS)</i>	✓
<i>Total Nitrogen</i>	
<i>Total Phosphorus</i>	✓
<i>Pesticides</i>	
<i>Total Metals</i>	✓
<i>Dissolved Metals</i>	✓
<i>Microbiological</i>	✓
<i>Litter</i>	✓
<i>Biochemical Oxygen Demand (BOD)</i>	
<i>Total Dissolved Solids (TDS)</i>	





Project Pollutants of Concern (POCs) must be addressed with site appropriate BMPs that have a rated removal efficiency of medium or high for each Project POC at a level of confidence of medium or high.

Using the Caltrans Report, acceptable Treatment Control BMPs for Project POCs are those listed in Appendix C with a removal efficiency of medium or high and a level of confidence of medium or high adjacent to each Project POC. If a particular BMP does not address all Project POCs, then a treatment train approach may be needed.

**Caltrans Report Appendix C
Example BMP Performance Table
Use for "Project POCs"
May also be used for "Project Pollutants"**

Constituent Group	Removal Efficiency	Level of Confidence
<i>Total Suspended Solids (TSS)</i>	●	●
<i>Total Nitrogen</i>	●	●
<i>Total Phosphorus</i>	○	●
<i>Pesticides</i>	○	○
<i>Total Metals</i>	●	●
<i>Dissolved Metals</i>	●	●
<i>Microbiological</i>	○	●
<i>Litter</i>	NA	
<i>Biochemical Oxygen Demand (BOD)</i>	○	○
<i>Total Dissolved Solids (TDS)</i>	○	○

Rating Key for Constituent
Removal Efficiency and
Level of Confidence

●	●	○
High	Medium	Low



Treatment Control BMPs that utilize infiltration to address Project Pollutants and Project POCs shall comply, at a minimum, with the Class V Injection Wells and Groundwater Protection Requirements in Appendix D of this Guide. At a minimum, pre-treatment BMPs for Class V Injection wells shall have a "✓" in Appendix B or a removal efficiency of low, medium, or high in Appendix C of the Caltrans Report for Litter and Total Suspended Solids, and shall include provisions for adsorption of Oil and Grease. On a project specific basis, additional constituents may need to be addressed through pre-treatment.

For the purpose of Treatment Control BMP selection, infiltration BMPs when used in conjunction with pre-treatment BMPs required by this Guide (if any), shall be considered to have a pollutant removal efficiency of medium or high with a confidence level of medium or high.

Land Use and Pollutants Table									
Land Use	Pollutants								
	Sediment/Turbidity	Nutrients	Organic Compounds	Trash and Debris	Oxygen Demanding Substances	Bacteria and Viruses	Oil and Grease	Pesticides	Metals
General Land Use									
Residential	P	P	N	P	P	P	N	P	N
Commercial	P	P	N	P	P	P ²	P	P	P
Industrial	P	P	P ¹	P	P	P ²	P	P	P
Specific Land Use									
Automotive Service or Repair	N	N	P ³	P	N	N	P	N	P
Gasoline Dispensing Facility	N	N	P ³	P	P	N	P	N	P
Restaurant	N	N	N	P	P	P	P	N	N
Land Use Features									
Alleys, Streets, Roads, Highways	P	P	P ⁴	P	P	P	P	P	P
Hillside Development	P	P	N	P	N	N	N	N	N
Parking Lots Open to Rainfall or with Runoff	P	P	P ⁴	P	P	P	P	P	P
Special Activities and Land Uses									
Project Specific Site Uses and Activities	P ⁵	P ⁵	P ⁵	P ⁵	P ⁵	P ⁵	P ⁵	P ⁵	P ⁵

N-Not expected to be a potential pollutant.

P-Expected to be a potential pollutant.

¹Solvents.

²A potential pollutant when land use involves animals or animal wastes.

³Solvents and petroleum hydrocarbons.

⁴Petroleum hydrocarbons.

⁵Project specific analysis required.



Description of Pollutantsⁱⁱ

Sediments – Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

Nutrients – Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as cultural eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.

Organic Compounds – Organic compounds are carbon-based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to the Municipal Separate Storm Sewer System (MS4). Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.

Trash and Debris – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash and debris may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. In addition, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.



Oxygen-Demanding Substances – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.

Bacteria and Viruses (Pathogens) – Bacteria and viruses (pathogens) are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

Oil and Grease – Oil and grease are characterized as high-molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies are very possible due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

Pesticides – Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive or improper application of a pesticide may result in runoff containing toxic levels of its active ingredient.

Metals – The primary source of metal pollution in Urban Runoff is typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. Metals are also raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. At low



concentrations naturally occurring in soil, metals may not be toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications.

ⁱ Endicott, Jeffrey D., *Project Pollutants and Pollutants of Concern – Knowing the Difference Makes a Difference*, presented at the California Stormwater Quality Association Annual Conference, September 26, 2006, Sacramento, California. Used with permission.

ⁱⁱ Adapted from the San Bernardino County Stormwater Program, *Model Water Quality Management Plan Guidance* (Revised June 9, 2005).