Memorandum

LARRY WALKER ASSOCIATES

Rebecca Winer-Skonovd, Senior Scientist

Malcolm Walker, P.E.

707 4th Street, Suite 200
Davis, CA 95616
530.753.6400
530.753.7030 fax
mackw@lwa.com

DATE: April 17, 2013

TO: LA Permit Group

SUBJECT: Green Streets Policy Recommendations

Cc: Sandy Mathews, LWA

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175[1] (MS4 Permit) requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are green streets policies in place and/or commence development of a policy(ies) that specifies the use of green street strategies for transportation corridors within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order." (emphasis added)

A green streets policy is not defined within the MS4 Permit with the exception of a reference to USEPA's *Managing Wet Weather with Green Infrastructure: Green Streets* that is cited under the Planning and Land Development provision as guidance for street and road post-construction compliance. This reference is stated below:

"(1) Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

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> (g) Street and road construction of 10,000 square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects."

[1] Adopted November 8, 2012.

In the absence of a formal MS4 Permit prescribed definition or guidance for green streets, the purpose of this technical memorandum is to summarize select green streets policies and identify a draft green street policy appropriate for the Los Angeles Permit Group consistent with the requirements of the MS4 Permit.

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According to US EPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[2], the functional goals of green streets are to "provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, restore predevelopment hydrology to the extent possible, and provide environmentally enhanced roads."

The document details the design elements of green streets design which are summarized below:

- Street Widths: Minimize impervious cover by narrowing minimum street width requirements. Local governments should examine codes to determine if minimum streets widths can be reduced.
- Swales: Treat and convey runoff from streets using swales (versus standard curb and gutter). Local governments should ensure that codes, ordinances and standard specifications do not place swales at the bottom of the street development hierarchy with curb and gutter at the top.
- Bioretention Curb Extensions and Sidewalk Planters: Utilize bioretention areas in the form of planter boxes or curb extensions to treat runoff from streets and sidewalks. Local governments should modify standard specifications to incorporate the specifications for street bioretention areas.
- Permeable Pavement: Utilize permeable concrete, permeable asphalt, permeable interlocking concrete pavers, and grid pavers. Local governments should incorporate standard specifications for permeable pavement.
- Sidewalk Trees and Tree Boxes: Provide adequate soil volume and good soil mixture to extend the longevity and health of street trees. This can be accomplished through structural soils, root paths, "silva cells", and permeable pavement.

CITY OF SANTA MONICA GREEN STREETS

The City of Santa Monica's Urban Runoff Pollution Control Ordinance, passed in July 2010, includes language requiring "green transportation infrastructure." Green transportation infrastructure is defined as, "streets, roads and alleys that have post-construction BMPs to harvest runoff for storage and onsite use, including green streets and green alleys." The ordinance specifies that any municipal roadway reconstruction projects greater than or equal to $500,000 shall integrate green transportation infrastructure post-construction BMPs.

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CITY OF LOS ANGELES GREEN STREETS

The City of Los Angeles' Board of Public Works adopted a Green Street initiative in May 2007 followed by an Official Green Street Policy adopted in July 2011. In addition to the formal adoption of the initiative and policy, the City also produced a report that provides design guidelines for green streets and green alleys and standard plans that incorporate green street BMPs into City approved construction details.

The Official Green Street Policy promotes the use of the public right-of-way as a large area where infiltration BMPs can be used to collect, retain, or detain stormwater runoff. The policy formalizes the Department of Public Works' efforts to pursue funds and implement green street BMPs in Capital Improvement Projects (CIPs). While the policy primarily applies to existing streets and roadways, the guidelines and standard plans can be used for the design of new streets or improving existing streets. The key recommendations from this policy are summarized below.

- Pursue funding for green street BMPs in CIPs whenever available and incorporate green street BMPs into CIP designs whenever funding guideline permits.
- Develop and adopt green street standard plans and guidelines.
- Develop an annual list of prioritized CIPs that include green street BMPs.
- Identify opportunities to implement green street BMPs as part of TMDL implementation plans.
- Conduct monitoring, as necessary, to evaluate the effectiveness of green street BMPs.
- Incorporate the green streets policy into appropriate design manuals and guidelines.
- Incorporate information from this policy into staff meetings and in-house training sessions.

CITY OF PORTLAND GREEN STREETS

The Portland City Council adopted a citywide policy for green streets in March 2007. The goal of the policy is to promote the use of green street BMPs in private and public development. The policy applies to new development and redevelopment and defines green streets as an amenity that handles stormwater onsite through the use of vegetated facilities, provides water quality benefits, can replenish groundwater, creates attractive streetscapes, connects neighborhoods, creates parks and wildlife habitats, and provides pedestrian and bicycle access. Key elements of the policy include:

- Incorporate green street BMPs into all City of Portland funded development projects that trigger the Stormwater Management Manual requirements. If green streets cannot be incorporated into the project, or only partial management is achieved, an offsite project or management fee is required.
- Require City of Portland funded development projects that occur in the right-of-way, but do not trigger the Stormwater Management Manual requirements, to pay into a Green Street fund at 1% of the construction costs for the project.

- Develop standards and incentives to encourage incorporation of green street BMPs into private development projects.
- Establish maintenance techniques and protocols for green street BMPs.
- Conduct ongoing monitoring to evaluate the effectiveness of green street BMPs.

SUMMARY OF EXISTING GREEN STREET POLICIES

A summary of existing green street polices are provided in the table below.

City	Applicability		Implementation Mechanism		
	CIP	New development/ redevelopment	Ordinance	Council adopted policy	Design guidance
City of Santa Monica	✓	✓	✓		
City of Los Angeles	✓			✓	✓
City of Portland	✓	✓		✓	✓

RECOMMENDATIONS

The three policies reviewed represent different approaches towards a green street policy. With that in mind a green street policy should at a minimum include the following provisions:

- Purpose – state the purpose of the policy and why it is needed.
- Application – clarify the type of transportation corridor projects that are subject to the policy.
- Amenities – identify the benefits from a green street policy.
- Retrofit scope –clarify the application of the policy to retrofit projects as they typically pose implementation challenges.
- Guidance – clarify what technical guidance will be applied to the policy.
- Training – identify training required to implement the policy.

A draft policy has been developed that capture these provisions and is attached to this memorandum.

Green Street Policy

Purpose

The City of [INSERT CITY NAME] [DEPARTMENT OF PUBLIC WORKS] shall implement green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

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   Alternate A (without General Plan reference).

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Alternatives to the 10,000 sf threshold:
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Alternatives to the major arterial:
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B. Amenities. The [DEPARTMENT OF PUBLIC WORKS] shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The [DEPARTMENT OF PUBLIC WORKS] shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[3], or equivalent guidance developed by the [DEPARTMENT OF PUBLIC WORKS] for use in public and private developments.

D. Retrofit Scope. The [DEPARTMENT OF PUBLIC WORKS] shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the [CITY ENGINEER] based on the availability of adequate funding.

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B. Amenities. The [DEPARTMENT OF PUBLIC WORKS] shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The [DEPARTMENT OF PUBLIC WORKS] shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[3], or equivalent guidance developed by the [DEPARTMENT OF PUBLIC WORKS] for use in public and private developments.

D. Retrofit Scope. The [DEPARTMENT OF PUBLIC WORKS] shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the [CITY ENGINEER] based on the availability of adequate funding.

E. Training. The [DEPARTMENT OF PUBLIC WORKS] shall incorporate aspects of green streets into internal annual staff trainings.

[3] EPA-833-F-08-009, December 2008.

Memorandum

LARRY WALKER ASSOCIATES

Rebecca Winer-Skonovd, Senior Scientist

Paul Hartman, Senior Scientist

707 4th Street, Suite 200

Davis, CA 95616

530.753.6400

530.753.7030 fax

paulh@lwa.com

DATE:	April 25, 2013
TO:	LA Permit Group
SUBJECT:	DRAFT LID Ordinance
Cc:	Mack Walker and Sandy Mathews, LWA

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175 (MS4 Permit), requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are LID ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of this Order's Planning and Land Development Program within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order."

In the interest of meeting this requirement, a draft Low Impact Development (LID) Ordinance is provided as **Attachment A** of this technical memorandum. Guidance for using and understanding the draft LID Ordinance is provided below:

1. Some municipalities may have ordinances already in place associated with the stormwater quality program including a provision regarding Standard Urban Storm Water Mitigation Plan (SUSMP) requirements. In these situations the draft LID Ordinance is intended to replace the SUSMP portion of the municipalities' Stormwater and Urban Runoff Pollution Control (or similarly titled) ordinance. In cases where a municipality does not have an ordinance addressing SUSMP requirements then the draft LID Ordinance is a stand-alone document.
2. The draft LID Ordinance is designed to ensure compliance with LID requirements for development and redevelopment projects. The ordinance is meant to provide enforceable language for existing or proposed LID Guidance Manuals while also providing a compliance mechanism for new permit requirements.

3. The draft LID Ordinance addresses onsite retention and treatment requirements, but does not address other aspects of Planning and Land Development such as plan review fees or operation and maintenance (O&M) requirements. Plan review fees or O&M requirements may be addressed in other sections of Permittees' stormwater quality ordinances or incorporated by reference via a LID Manual.
4. The draft LID Ordinance was primarily based on the City of Los Angeles' LID Ordinance but modified to include the MS4 Permit requirements. Whenever possible and appropriate definitions from the MS4 Permit were included in the draft LID Ordinance.
5. The draft LID Ordinance is organized to include:
    a. Findings
    b. Definitions
    c. Stormwater Pollution Control Measures for Development Planning and Construction Activities.
6. Gray shading in the draft LID Ordinance indicates areas that are optional and/or areas where the Permittee may wish to provide more detail.
    a. In particular, this includes language that mentions hydromodification requirements and alternative compliance options and refers to the MS4 Permit for additional language. In these cases, references to the MS4 Permit were provided instead of detailed ordinance language to provide Permittees with flexibility to determine how hydromodification and alternative compliance (e.g., how to manage and track developer offsite mitigation) in the future.
7. The draft LID Ordinance contains language in brackets to indicate where a local program should insert its particular information. An example is the [CITY NAME].

ATTACHMENT A: DRAFT LID ORDINANCE

ORDINANCE NO.________________________

An ordinance amending [MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code to expand the applicability of the existing [NAME OF POST-CONSTRUCITON REQUIREMENTS – LIKELY "SUSMP" FOR MOST MUNICIPALITIES] requirements by imposing Low Impact Development (LID) strategies on projects that require building permits and/or encroachment permits.

Findings.

(A) The [CITY NAME] is authorized by Article XI, §5 and §7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity.

(B) The [CITY NAME] has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State.

(C) The city is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board--Los Angeles Region," (Order No. R4-2012-0175) which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit"). In order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program, the Municipal NPDES permit requires permittees to develop and implement a LID Ordinance.

(D) The [CITY NAME] has applied an integrated approach to incorporate wastewater, stormwater and runoff, and recycled water management into a single strategy through its Integrated Resources Plan.

(E) The [CITY NAME] is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social, and economic considerations.

(F) Urbanization has led to increased impervious surface areas resulting in increased water runoff causing the transport of pollutants to downstream receiving waters.

(G) The [CITY NAME] needs to take a new approach to managing rainwater and urban runoff while mitigating the negative impacts of development and urbanization.

(H) LID is widely recognized as a sensible approach to managing the quantity and quality of storm water and non-stormwater runoff by setting standards and practices to maintain or

restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

(I) It is the intent of the [CITY NAME] to replace the existing Standard Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under "Applicability." Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

[MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code is amended in its entirety to read as follows:

Definitions.

Except as specifically provided herein, any term used in this [SECTION REFERENCE] shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this chapter:

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater (Source: Order No. R4-2012-0175).

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Source: Order No. R4-2012-0175).

Best Management Practice (BMP) means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Source: Order No. R4-2012-0175).

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from: Order No. R4-2012-0175).

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Source: Order No. R4-2012-0175).

City means the [CITY NAME].

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Source: Order No. R4-2012-0175).

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Source: Order No. R4-2012-0175).

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Source: Order No. R4-2012-0175).

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency

projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Source: Order No. R4-2012-0175).

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation (Source: Order No. R4-2012-0175).

Flow-through BMPs means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Modified from: Order No. R4-2012-0175).

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Source: Order No. R4-2012-0175).

Hazardous Material(s) means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Source: Order No. R4-2012-0175).

Hydromodification means the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation. (Source: GCASP)

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Source: Order No. R4-2012-0175).

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Source: Order No. R4-2012-0175).

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff (Source: Order No. R4-2012-0175).

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

(40 CFR § 122.26(b)(8)) (Source: Order No. R4-2012-0175)

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program" (Source: Order No. R4-2012-0175).

Natural Drainage System means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Source: Order No. R4-2012-0175).

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Source: Order No. R4-2012-0175).

Non-Stormwater Discharge means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Source: Order No. R4-2012-0175).

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Source: Order No. R4-2012-0175).

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

Pollutant means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

(1) Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).

(2) Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).

(3) Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).

(4) Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

(5) Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities).

(6) Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065) (Source: Order No. R4-2012-0175).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Source: Order No. R4-2012-0175).

Receiving Water means "water of the United States" into which waste and/or pollutants are or may be discharged (Source: Order No. R4-2012-0175).

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Regional Board means the California Regional Water Quality Control Board, Los Angeles Region.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Source: Order No. R4-2012-0175).

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils (Source: Order No. R4-2012-0175).

Routine Maintenance
Routine maintenance projects include, but are not limited to projects conducted to:
1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.
* Update existing lines includes replacing existing lines with new materials or pipes.
** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Source: Order No. R4-2012-0175).

Storm Drain System means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the [CITY NAME].

Storm Water or Stormwater means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.

Stormwater Runoff means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

[MUNICIPAL CODE SECTION REFERENCE(S)] is amended to read as follows:

SEC. [X]. STORMWATER POLLUTION CONTROL MEASURES FOR DEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of previously adopted SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the [CITY NAME] to further define and adopt stormwater pollution control measures, to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, and to grant waivers or alternate compliance as allowed by the Municipal NPDES permit and collect fees from projects granted exceptions. . Except as otherwise provided herein, the [CITY NAME] shall administer, implement and enforce the provisions of this Section. Guidance documents supporting implementation of requirements in this Ordinance are hereby incorporated by reference, including SUSMP and LID Manuals.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of [SECTION NUMBER]:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(12) Any other project as deemed appropriate by the Director.

(D) Effective Date. The Planning and Land Development requirements contained in this Ordinance shall become effective XX days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in the Municipal NPDES Permit. Hydromodification requirements are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

c. When, as determined by the [APPROVING AGENCY], 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the [APPROVING AGENCY] to determine eligibility. Alternative compliance options are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit.

Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or
ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

f. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the [APPROVING AGENCY] to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(E) Other Agencies of the [CITY NAME]. All [CITY NAME] departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the [REPSONSIBLE AGENCY].

(F) Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

(G) Certification. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy.

I hereby certify that this ordinance was passed by the Council of the [CITY NAME], at its meeting of ________________________.

[NAME], City Clerk

By ______________________________________

Deputy

Approved ____________________________

____
Mayor

Approved as to Form and Legality
[NAME], City Attorney

By ____
[NAME]
Deputy City Attorney

Date ________________________________

File No. ______________________________

Memorandum

LARRY WALKER ASSOCIATES

Rebecca Winer-Skonovd, Senior Scientist

Paul Hartman, Senior Scientist

707 4th Street, Suite 200

Davis, CA 95616

530.753.6400

530.753.7030 fax

paulh@lwa.com

DATE: April 25, 2013

TO: LA Permit Group

SUBJECT: DRAFT LID Ordinance

Cc: Mack Walker and Sandy Mathews, LWA

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175 (MS4 Permit), requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are LID ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of this Order's Planning and Land Development Program within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order."

In the interest of meeting this requirement, a draft Low Impact Development (LID) Ordinance is provided as **Attachment A** of this technical memorandum. Guidance for using and understanding the draft LID Ordinance is provided below:

1. Some municipalities may have ordinances already in place associated with the stormwater quality program including a provision regarding Standard Urban Storm Water Mitigation Plan (SUSMP) requirements. In these situations the draft LID Ordinance is intended to replace the SUSMP portion of the municipalities' Stormwater and Urban Runoff Pollution Control (or similarly titled) ordinance. In cases where a municipality does not have an ordinance addressing SUSMP requirements then the draft LID Ordinance is a stand-alone document.
2. The draft LID Ordinance is designed to ensure compliance with LID requirements for development and redevelopment projects. The ordinance is meant to provide enforceable language for existing or proposed LID Guidance Manuals while also providing a compliance mechanism for new permit requirements.

3. The draft LID Ordinance addresses onsite retention and treatment requirements, but does not address other aspects of Planning and Land Development such as plan review fees or operation and maintenance (O&M) requirements. Plan review fees or O&M requirements may be addressed in other sections of Permittees' stormwater quality ordinances or incorporated by reference via a LID Manual.
4. The draft LID Ordinance was primarily based on the City of Los Angeles' LID Ordinance but modified to include the MS4 Permit requirements. Whenever possible and appropriate definitions from the MS4 Permit were included in the draft LID Ordinance.
5. The draft LID Ordinance is organized to include:
    a. Findings
    b. Definitions
    c. Stormwater Pollution Control Measures for Development Planning and Construction Activities.
6. Gray shading in the draft LID Ordinance indicates areas that are optional and/or areas where the Permittee may wish to provide more detail.
    a. In particular, this includes language that mentions hydromodification requirements and alternative compliance options and refers to the MS4 Permit for additional language. In these cases, references to the MS4 Permit were provided instead of detailed ordinance language to provide Permittees with flexibility to determine how hydromodification and alternative compliance (e.g., how to manage and track developer offsite mitigation) in the future.
7. The draft LID Ordinance contains language in brackets to indicate where a local program should insert its particular information. An example is the [CITY NAME].

ATTACHMENT A: DRAFT LID ORDINANCE

ORDINANCE NO.________________________

An ordinance amending [MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code to expand the applicability of the existing [NAME OF POST-CONSTRUCITON REQUIREMENTS – LIKELY "SUSMP" FOR MOST MUNICIPALITIES] requirements by imposing Low Impact Development (LID) strategies on projects that require building permits and/or encroachment permits.

Findings.

(A) The [CITY NAME] is authorized by Article XI, §5 and §7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity.

(B) The [CITY NAME] has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State.

(C) The city is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board--Los Angeles Region," (Order No. R4-2012-0175) which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit"). In order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program, the Municipal NPDES permit requires permittees to develop and implement a LID Ordinance.

(D) The [CITY NAME] has applied an integrated approach to incorporate wastewater, stormwater and runoff, and recycled water management into a single strategy through its Integrated Resources Plan.

(E) The [CITY NAME] is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social, and economic considerations.

(F) Urbanization has led to increased impervious surface areas resulting in increased water runoff causing the transport of pollutants to downstream receiving waters.

(G) The [CITY NAME] needs to take a new approach to managing rainwater and urban runoff while mitigating the negative impacts of development and urbanization.

(H) LID is widely recognized as a sensible approach to managing the quantity and quality of storm water and non-stormwater runoff by setting standards and practices to maintain or

restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

(I) It is the intent of the [CITY NAME] to replace the existing Standard Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under "Applicability." Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

[MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code is amended in its entirety to read as follows:

Definitions.

Except as specifically provided herein, any term used in this [SECTION REFERENCE] shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this chapter:

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater (Source: Order No. R4-2012-0175).

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Source: Order No. R4-2012-0175).

Best Management Practice (BMP) means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Source: Order No. R4-2012-0175).

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from: Order No. R4-2012-0175).

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Source: Order No. R4-2012-0175).

City means the [CITY NAME].

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Source: Order No. R4-2012-0175).

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Source: Order No. R4-2012-0175).

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Source: Order No. R4-2012-0175).

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency

projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Source: Order No. R4-2012-0175).

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation (Source: Order No. R4-2012-0175).

Flow-through BMPs means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Modified from: Order No. R4-2012-0175).

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Source: Order No. R4-2012-0175).

Hazardous Material(s) means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Source: Order No. R4-2012-0175).

Hydromodification means the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation. (Source: GCASP)

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Source: Order No. R4-2012-0175).

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Source: Order No. R4-2012-0175).

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff (Source: Order No. R4-2012-0175).

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

(40 CFR § 122.26(b)(8)) (Source: Order No. R4-2012-0175)

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program" (Source: Order No. R4-2012-0175).

Natural Drainage System means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Source: Order No. R4-2012-0175).

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Source: Order No. R4-2012-0175).

Non-Stormwater Discharge means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Source: Order No. R4-2012-0175).

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Source: Order No. R4-2012-0175).

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

Pollutant means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

(1) Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).

(2) Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).

(3) Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).

(4) Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

(5) Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities).

(6) Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065) (Source: Order No. R4-2012-0175).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Source: Order No. R4-2012-0175).

Receiving Water means "water of the United States" into which waste and/or pollutants are or may be discharged (Source: Order No. R4-2012-0175).

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Regional Board means the California Regional Water Quality Control Board, Los Angeles Region.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Source: Order No. R4-2012-0175).

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils (Source: Order No. R4-2012-0175).

Routine Maintenance
Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Source: Order No. R4-2012-0175).

Storm Drain System means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the [CITY NAME].

Storm Water or Stormwater means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.

Stormwater Runoff means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

[MUNICIPAL CODE SECTION REFERENCE(S)] is amended to read as follows:

SEC. [X]. STORMWATER POLLUTION CONTROL MEASURES FOR DEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of previously adopted SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the [CITY NAME] to further define and adopt stormwater pollution control measures, to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, and to grant waivers or alternate compliance as allowed by the Municipal NPDES permit and collect fees from projects granted exceptions. . Except as otherwise provided herein, the [CITY NAME] shall administer, implement and enforce the provisions of this Section. Guidance documents supporting implementation of requirements in this Ordinance are hereby incorporated by reference, including SUSMP and LID Manuals.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of [SECTION NUMBER]:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(12) Any other project as deemed appropriate by the Director.

(D) Effective Date. The Planning and Land Development requirements contained in this Ordinance shall become effective XX days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in the Municipal NPDES Permit. Hydromodification requirements are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

c. When, as determined by the [APPROVING AGENCY], 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the [APPROVING AGENCY] to determine eligibility. Alternative compliance options are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit.

Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or
ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

f. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the [APPROVING AGENCY] to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(E) Other Agencies of the [CITY NAME]. All [CITY NAME] departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the [REPSONSIBLE AGENCY].

(F) Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

(G) Certification. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy.

I hereby certify that this ordinance was passed by the Council of the [CITY NAME], at its meeting of ______________________.

[NAME], City Clerk

By ____________________________________

Deputy

Approved ______________________________

____
Mayor

Approved as to Form and Legality
[NAME], City Attorney

By ______________________________
[NAME]
Deputy City Attorney

Date ______________________________

File No. ______________________________

Memorandum

LARRY WALKER ASSOCIATES

DATE:	April 25, 2013
TO:	LA Permit Group
SUBJECT:	DRAFT LID Ordinance
Cc:	Mack Walker and Sandy Mathews, LWA

Rebecca Winer-Skonovd, Senior Scientist

Paul Hartman, Senior Scientist

707 4th Street, Suite 200

Davis, CA 95616

530.753.6400

530.753.7030 fax

paulh@lwa.com

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175 (MS4 Permit), requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are LID ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of this Order's Planning and Land Development Program within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order."

In the interest of meeting this requirement, a draft Low Impact Development (LID) Ordinance is provided as **Attachment A** of this technical memorandum. Guidance for using and understanding the draft LID Ordinance is provided below:

1. Some municipalities may have ordinances already in place associated with the stormwater quality program including a provision regarding Standard Urban Storm Water Mitigation Plan (SUSMP) requirements. In these situations the draft LID Ordinance is intended to replace the SUSMP portion of the municipalities' Stormwater and Urban Runoff Pollution Control (or similarly titled) ordinance. In cases where a municipality does not have an ordinance addressing SUSMP requirements then the draft LID Ordinance is a stand-alone document.
2. The draft LID Ordinance is designed to ensure compliance with LID requirements for development and redevelopment projects. The ordinance is meant to provide enforceable language for existing or proposed LID Guidance Manuals while also providing a compliance mechanism for new permit requirements.

3. The draft LID Ordinance addresses onsite retention and treatment requirements, but does not address other aspects of Planning and Land Development such as plan review fees or operation and maintenance (O&M) requirements. Plan review fees or O&M requirements may be addressed in other sections of Permittees' stormwater quality ordinances or incorporated by reference via a LID Manual.
4. The draft LID Ordinance was primarily based on the City of Los Angeles' LID Ordinance but modified to include the MS4 Permit requirements. Whenever possible and appropriate definitions from the MS4 Permit were included in the draft LID Ordinance.
5. The draft LID Ordinance is organized to include:
    a. Findings
    b. Definitions
    c. Stormwater Pollution Control Measures for Development Planning and Construction Activities.
6. Gray shading in the draft LID Ordinance indicates areas that are optional and/or areas where the Permittee may wish to provide more detail.
    a. In particular, this includes language that mentions hydromodification requirements and alternative compliance options and refers to the MS4 Permit for additional language. In these cases, references to the MS4 Permit were provided instead of detailed ordinance language to provide Permittees with flexibility to determine how hydromodification and alternative compliance (e.g., how to manage and track developer offsite mitigation) in the future.
7. The draft LID Ordinance contains language in brackets to indicate where a local program should insert its particular information. An example is the [CITY NAME].

ATTACHMENT A: DRAFT LID ORDINANCE

ORDINANCE NO.______________________

An ordinance amending [MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code to expand the applicability of the existing [NAME OF POST-CONSTRUCITON REQUIREMENTS – LIKELY "SUSMP" FOR MOST MUNICIPALITIES] requirements by imposing Low Impact Development (LID) strategies on projects that require building permits and/or encroachment permits.

Findings.

(A) The [CITY NAME] is authorized by Article XI, §5 and §7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity.

(B) The [CITY NAME] has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State.

(C) The city is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board--Los Angeles Region," (Order No. R4-2012-0175) which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit"). In order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program, the Municipal NPDES permit requires permittees to develop and implement a LID Ordinance.

(D) The [CITY NAME] has applied an integrated approach to incorporate wastewater, stormwater and runoff, and recycled water management into a single strategy through its Integrated Resources Plan.

(E) The [CITY NAME] is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social, and economic considerations.

(F) Urbanization has led to increased impervious surface areas resulting in increased water runoff causing the transport of pollutants to downstream receiving waters.

(G) The [CITY NAME] needs to take a new approach to managing rainwater and urban runoff while mitigating the negative impacts of development and urbanization.

(H) LID is widely recognized as a sensible approach to managing the quantity and quality of storm water and non-stormwater runoff by setting standards and practices to maintain or

restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

(I) It is the intent of the [CITY NAME] to replace the existing Standard Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under "Applicability." Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

[MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code is amended in its entirety to read as follows:

Definitions.

Except as specifically provided herein, any term used in this [SECTION REFERENCE] shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this chapter:

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater (Source: Order No. R4-2012-0175).

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Source: Order No. R4-2012-0175).

Best Management Practice (BMP) means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Source: Order No. R4-2012-0175).

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from: Order No. R4-2012-0175).

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Source: Order No. R4-2012-0175).

City means the [CITY NAME].

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Source: Order No. R4-2012-0175).

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Source: Order No. R4-2012-0175).

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Source: Order No. R4-2012-0175).

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency

projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Source: Order No. R4-2012-0175).

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation (Source: Order No. R4-2012-0175).

Flow-through BMPs means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Modified from: Order No. R4-2012-0175).

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Source: Order No. R4-2012-0175).

Hazardous Material(s) means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Source: Order No. R4-2012-0175).

Hydromodification means the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation. (Source: GCASP)

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Source: Order No. R4-2012-0175).

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Source: Order No. R4-2012-0175).

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff (Source: Order No. R4-2012-0175).

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

(40 CFR § 122.26(b)(8)) (Source: Order No. R4-2012-0175)

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program" (Source: Order No. R4-2012-0175).

Natural Drainage System means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Source: Order No. R4-2012-0175).

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Source: Order No. R4-2012-0175).

Non-Stormwater Discharge means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Source: Order No. R4-2012-0175).

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Source: Order No. R4-2012-0175).

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

Pollutant means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

(1) Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).

(2) Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).

(3) Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).

(4) Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

(5) Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities).

(6) Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065) (Source: Order No. R4-2012-0175).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Source: Order No. R4-2012-0175).

Receiving Water means "water of the United States" into which waste and/or pollutants are or may be discharged (Source: Order No. R4-2012-0175).

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Regional Board means the California Regional Water Quality Control Board, Los Angeles Region.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Source: Order No. R4-2012-0175).

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils (Source: Order No. R4-2012-0175).

Routine Maintenance
Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Source: Order No. R4-2012-0175).

Storm Drain System means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the [CITY NAME].

Storm Water or Stormwater means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.

Stormwater Runoff means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

[MUNICIPAL CODE SECTION REFERENCE(S)] is amended to read as follows:

SEC. [X]. STORMWATER POLLUTION CONTROL MEASURES FOR DEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of previously adopted SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the [CITY NAME] to further define and adopt stormwater pollution control measures, to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, and to grant waivers or alternate compliance as allowed by the Municipal NPDES permit and collect fees from projects granted exceptions. . Except as otherwise provided herein, the [CITY NAME] shall administer, implement and enforce the provisions of this Section. Guidance documents supporting implementation of requirements in this Ordinance are hereby incorporated by reference, including SUSMP and LID Manuals.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of [SECTION NUMBER]:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(12) Any other project as deemed appropriate by the Director.

(D) Effective Date. The Planning and Land Development requirements contained in this Ordinance shall become effective XX days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in the Municipal NPDES Permit. Hydromodification requirements are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

c. When, as determined by the [APPROVING AGENCY], 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the [APPROVING AGENCY] to determine eligibility. Alternative compliance options are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit.

Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or
ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

f. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the [APPROVING AGENCY] to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(E) Other Agencies of the [CITY NAME]. All [CITY NAME] departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the [REPSONSIBLE AGENCY].

(F) Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

(G) Certification. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy.

I hereby certify that this ordinance was passed by the Council of the [CITY NAME], at its meeting of ______________________.

[NAME], City Clerk

By ________________________________

Deputy

Approved ______________________________

____ Mayor

Approved as to Form and Legality
[NAME], City Attorney

By ____
[NAME]
Deputy City Attorney

Date ___________________________________

File No. ________________________________

Notice of Intent (NOI) to Develop an East San Gabriel Valley Watershed Management Area Watershed Management Program Plan

SECTION 1. PERMITTEES PARTICIPATION AND PROGRAM TYPE

The East San Gabriel Valley (ESGV) Watershed Management Area (WMA) which includes the Cities of Claremont, La Verne, Pomona and San Dimas hereby notify the Los Angeles Regional Water Quality Control Board (Regional Water Board) of our intent to develop Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) Plans in accordance with Part VI.C.4.b.i of Order R4-2012-0175. A letter from each agency's respective official, noting its intent to work with the ESGV WMA, is included as Attachment A for your review. Order R4-2012-0175 is otherwise known as the 2012 Municipal Separate Storm Sewer System (MS4) Permit for Coastal Watersheds of Los Angeles County and the identified Cities are Permittees under that order. The ESGV WMA Permittees have drafted Low Impact Development (LID) Ordinances and Green Street Policies, but may delay their final adoption and implementation until functional conformance with similar regional documents, being developed by the County of Los Angeles, can be established. The ESGV WMA Permittees intend to submit our Draft WMP and CIMP Plans within 18 months from the effective date of Order R4-2012-0175, which currently appears to be June 28, 2014. The ESGV WMA Permittees are identified in **Figure 1**.

While the ESGV WMA Permittees are proceeding in good faith to develop the WMP and CIMP plans, many Permittees, including the ESGV WMA Cities of Claremont and Pomona, have petitioned the State Water Resources Control Board (SWRCB) to review Order R4-2012-0175 and the Receiving Water Limitations (RWLs) language it contains. Furthermore, the Regional Board has been advised of various inconsistencies in the Permit and the need for revisions. As a result of these evolving permit interpretations and unforeseeable actions by the SWRCB, or other watershed stakeholders, the ESGV WMA Permittees reserve the right to revise this NOI prior to the final compliance date for submission of the draft WMP and CIMP plans.

SECTION 2. TOTAL MAXIMUM DAILY LOADS ESTABLISHED WATER QUALITY BASED EFFLUENT LIMITATIONS

The Total Maximum Daily Loads (TMDLs) that are currently applicable to the ESGV WMA Permittees were developed by either the United States Environmental Protection Agency (USEPA) or adopted by the Santa Ana Regional Water Quality Control Board. As shown in **Figure 2**, a substantial portion on the eastern side of the Cities of Claremont and Pomona drain to the San Antonio or Chino Creeks and the Santa Ana River. Although the ESGV WMA Permittees continue to implement Best Management Practices (BMPs) and other pollutant source controls that should alleviate the TMDL identified beneficial use impairments, these TMDLs contain no interim or final RWLs or Water Quality Based Effluent Limitations (WQBELs) compliance dates during the WMP and CIMP Plans development period. Compliance Schedules for USEPA established TMDLs would be developed as proposed in Permit Part VI.E.3, while the Middle Santa Ana River Bacteria TMDL schedule will follow Permit Attachment R.

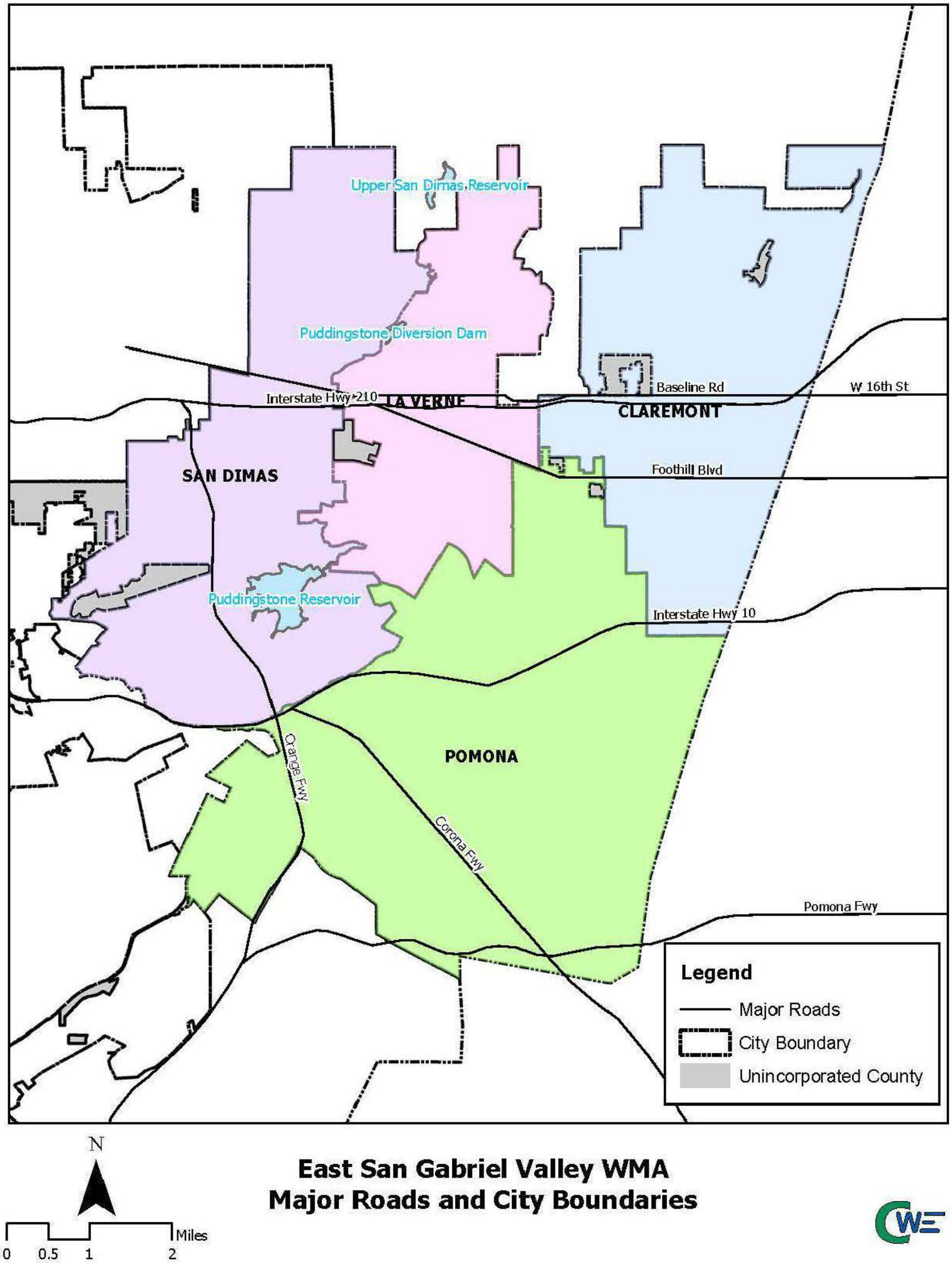

Figure 1. East San Gabriel Valley Watershed Management Area Permittees and Vicinity Map.

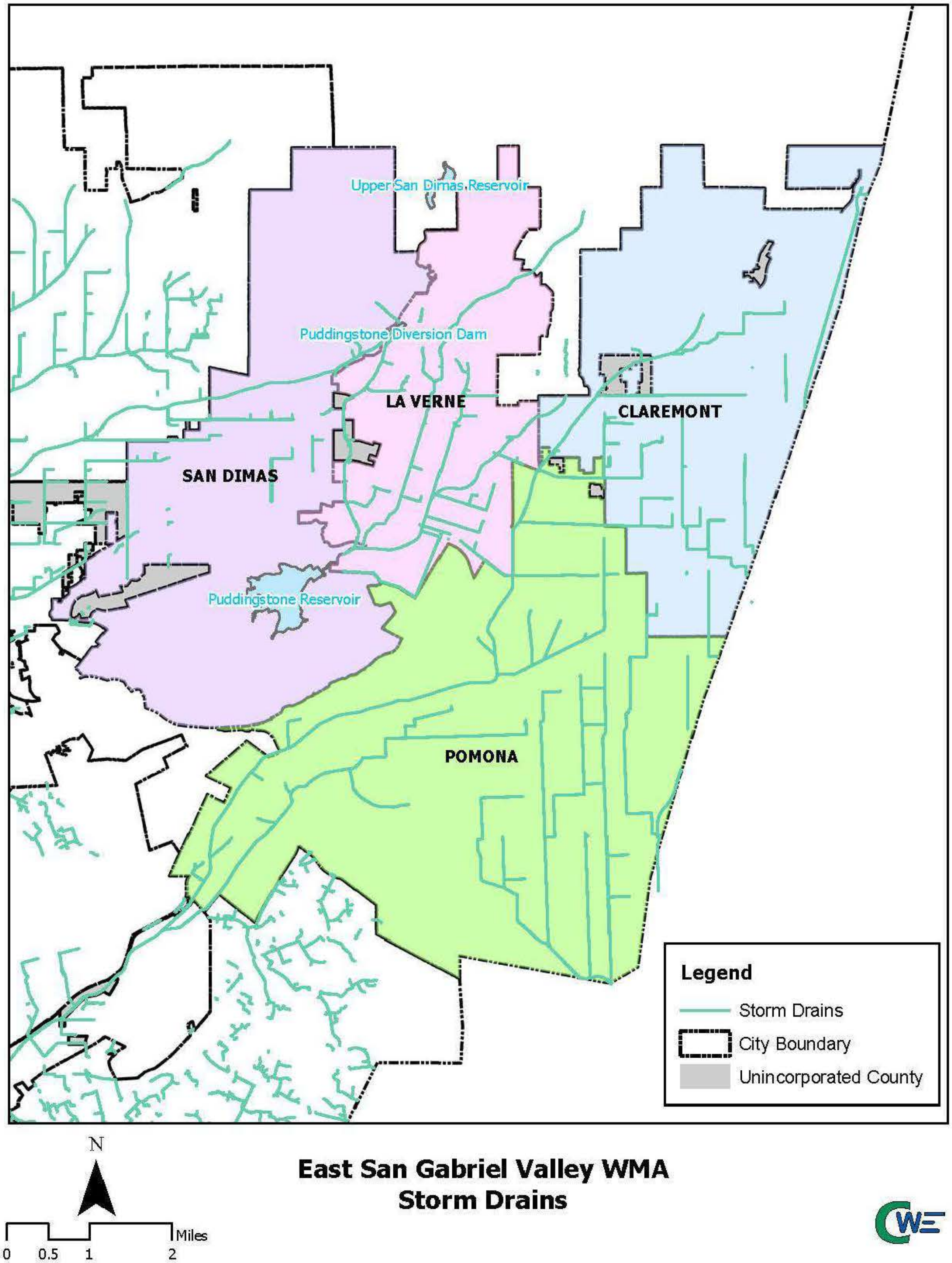

Figure 2. Major Drainage Conveyances in the East San Gabriel Valley WMA.

RB-AR3288

SECTION 3. IDENTIFY TMDL CONTROL MEASURES

The ESGV WMA Permittees intend to continue to effectively implement the Minimum Control Measures (MCM) provisions of the 2012 MS4 Permit in anticipation of demonstrating continued progress toward regional water quality and beneficial use objectives in local receiving waters.

SECTION 4. LID ORDINANCE AND GREEN STREETS POLICY STATUS

The ESGV WMA Cities of Claremont, La Verne, and Pomona have drafted LID ordinances and Green Streets policies, derived from the templates provided by the Los Angeles Permit Group, which follow as Attachments B and C respectively. The City of San Dimas has developed separate draft LID and Green Streets documents, which follow as Attachments D and E respectively. The adoption status of these measures, within the ESGV WMA, is summarized on **Tables 1** and **2**, using Permittee area estimates provided by the Los Angeles County Department of Public Works. Once adopted, these ordinances and policies are anticipated to be in compliance with applicable sections of the 2012 MS4 Permit. However, to avoid unanticipated discrepancies or conflicting interpretations among adjacent agencies, adoption of the ordinance by each agency will follow release, and review for substantial conformance, of the County of Los Angeles LID Ordinance. Subwatersheds from the Los Angeles County Geospatial Library, are shown in **Figure 3,** however these areas may be subject to revision during WMP Plan development, when the boundaries must be better characterized in anticipation of CIMP and RAA analyses.

Table 1. Status of LID Ordinance Adoption by the ESGV WMA Permittees.

ESGV WMA Permittee	LID Ordinance Status	ESGV WMA for which Permittee is Responsible [acres]	ESGV WMA Addressed by Permittee's Draft LID Ordinance [acres]	Percent of Watershed Area
City of Claremont	Draft Ordinance	5,790	5,790	100%
City of La Verne	Draft Ordinance	5,030	5,030	100%
City of Pomona	Draft Ordinance	7,929	7,929	100%
City of San Dimas	Draft Ordinance	8,539	8,539	100%
Summary for ESGV WMA		27,288	27,288	**100%**

Table 2. Status of Green Street Policy Adoption by the ESGV WMA Permittees.

ESGV WMA Permittee	Green Street Policy Status	ESGV WMA for which Permittee is Responsible [acres]	ESGV WMA Addressed by Permittee's Draft Green Street Policy [acres]	Percent of Watershed Area
City of Claremont	Draft Policy	5,790	5,790	100%
City of La Verne	Draft Policy	5,030	5,030	100%
City of Pomona	Draft Policy	7,929	7,929	100%
City of San Dimas	Draft Policy	8,539	8,539	100%
Summary for ESGV WMA		27,288	27,288	**100%**

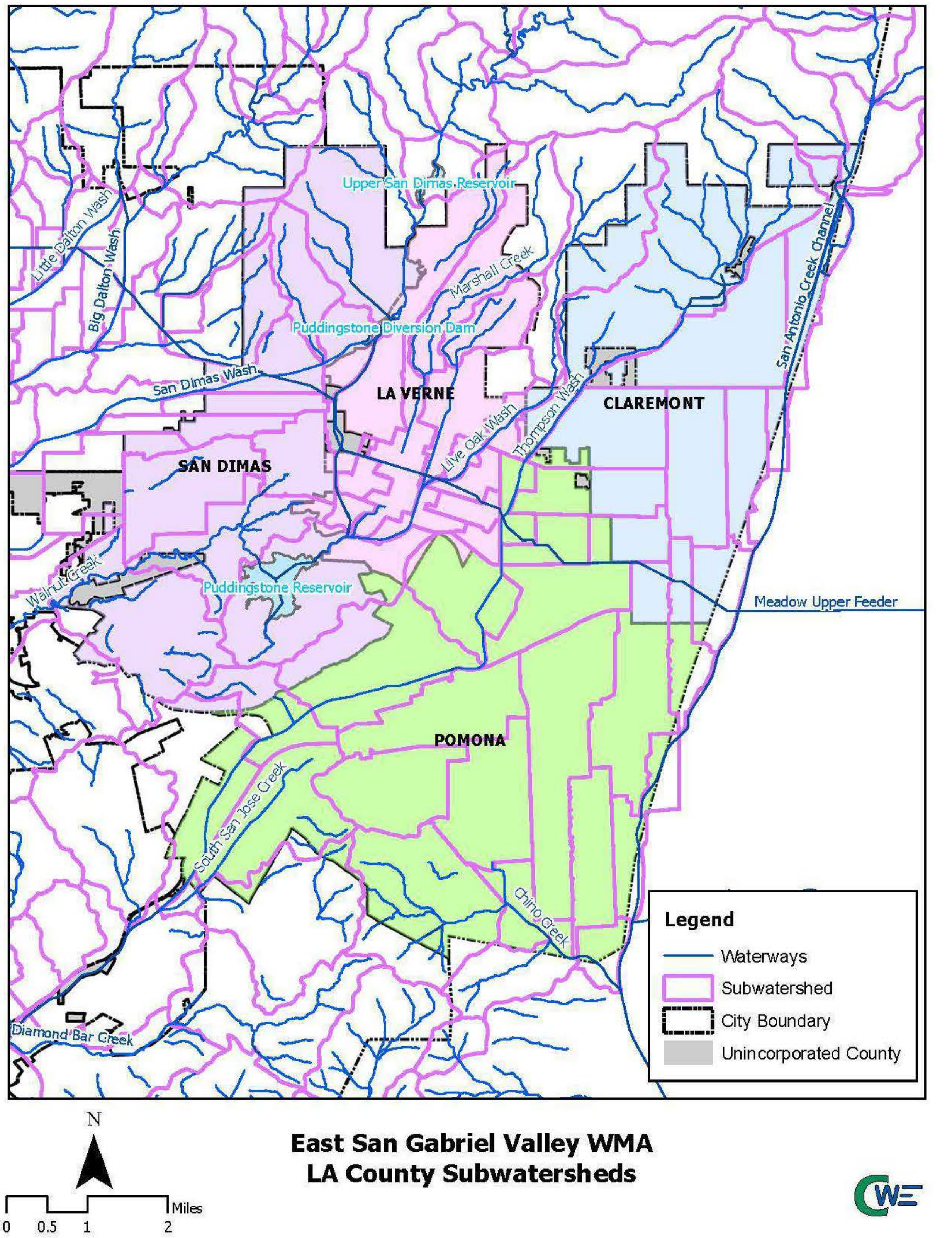

Figure 3. Los Angeles County Designated Subwatersheds in the East San Gabriel Valley WMA.

ATTACHMENT A

CITY OF CLAREMONT

Tony Ramos, City Manager

City Hall
207 Harvard Avenue
P.O. Box 880
Claremont, CA 91711-0880
FAX (909) 399-5492
www.ci.claremont.ca.us

City Manager • (909) 399-5441
City Clerk • (909) 399-5460
Community Information • (909) 399-5497
Personnel • (909) 399-5450
Technology • (909) 399-5462

June 26, 2013

Attention: Renee Purdy
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

NOTICE OF INTENT TO DEVELOP THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT AREA WATERSHED MANAGEMENT PROGRAM (WMP) AND COORDINATED INTEGRATED MONITORING PROGRAM (CIMP)

CITY OF CLAREMONT SUBMITTAL LETTER

Dear Ms. Purdy:

The Cities of Claremont, La Verne, Pomona, and San Dimas have joined together to form the East San Gabriel Valley Watershed Management Area and are providing you with this Notice of Intent (NOI) to develop a Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) Plans to comply with the 2012 MS4 Permit, otherwise known as Regional Board Order No.R4-2012-0175. The Claremont City Council approved the joint submittal of the WMP and CIMP at their meeting of June 11, 2013.

Pending the resolution of outstanding petitions and language related issues currently before the State Water Board, our intent is to provide the Draft WMP by June 28, 2014.

Should you have any questions, please contact Acting City Engineer Loretta Mustafa at (909) 399-5474.

Sincerely,

Tony Ramos
City Manager
City of Claremont

East San Gabriel River Watershed Group

Intent to Participate

The City of Claremont ("City") has agreed to collaborate with the neighboring cities of La Verne, Pomona, and San Dimas ("Member Agencies") to implement the requirements mandated by the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175). Collaborating with the aforementioned cities shall include developing a Watershed Management Plan (WMP) **or** an Enhanced Watershed Management Plan (EWMP), as determined by a technical feasibility analysis. The City further agrees to share in the cost accrued to obtain a consultant to assess the technical feasibility of developing a WMP or a EWMP. The anticipated cost to obtain a technical consultant is estimated at **$20,000** to be equally divided among the Member Agencies. Furthermore, the City authorizes the City of La Verne to execute and manage the contract with the selected consultant.

☒ Yes, the City of Claremont agrees to partner with other Member Agencies in developing an Enhanced Watershed Management Plan (EWMP) or a Watershed Management Plan (WMP), including cost sharing for the technical feasibility analysis consultant as described above. With the understanding that **each** City remains individually responsible for associated violations in their jurisdiction that do not affect the other Member Agencies.

☐ No, the City of Claremont is not interested in participating.

Please sign below confirming your City's participation/approval or non-participation and return this form to JR Ranells via email at: jranells@ci.la-verne.ca.us **no later than Monday, March 18, 2013.**

Name: Brian Desatnik

Title: Director of Community Development

Signature: Brian Desatnik

Date: 3/18/13

CITY OF LAVERNE
CITY HALL
3660 "D" Street, La Verne, California 91750-3599
www.ci.la-verne.ca.us

June 26, 2013

Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Renee Purdy

NOTICE OF INTENT TO DEVELOP THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT AREA WATERSHED MANAGEMENT PROGRAM (WMP) AND COORDINATED INTEGRATED MONITORING PROGRAM (CIMP)

Dear Ms. Purdy;

The Cities of Claremont, La Verne, Pomona, and San Dimas have joined together to form the East San Gabriel Valley Watershed Management Area and are providing you this Notice of Intent (NOI) to develop Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) Plans to comply with 2012 MS4 Permit otherwise known as Regional Board Order No. R4-2012-0175. Pending the resolution of outstanding petitions and language related issues currently before the State Water Board, our intent is to provide the Draft WMP by June 28, 2014.

Should you have any questions, please contact JR Ranells at jranells@ci.la-verne.ca.us or by phone at (909) 596-8710.

Sincerely,

Bob Russi
City Manager

East San Gabriel River Watershed Group

Intent to Participate

The City of La Verne ("City") has agreed to collaborate with the neighboring cities of Claremont, La Verne, Pomona, and San Dimas ("Member Agencies") to implement the requirements mandated by the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175). Collaborating with the aforementioned cities shall include developing a Watershed Management Plan (WMP) **or** an Enhanced Watershed Management Plan (EWMP), as determined by a technical feasibility analysis. The City further agrees to share in the cost accrued to obtain a consultant to assess the technical feasibility of developing a WMP or a EWMP. The anticipated cost to obtain a technical consultant is estimated at **$20,000** to be equally divided among the Member Agencies. Furthermore, the City authorizes the City of La Verne to execute and manage the contract with the selected consultant.

☒ Yes, the City of La Verne agrees to partner with other Member Agencies in developing an Enhanced Watershed Management Plan (EWMP) or a Watershed Management Plan (WMP), including cost sharing for the technical feasibility analysis consultant as described above. With the understanding that **each** City remains individually responsible for associated violations in their jurisdiction that do not affect the other Member Agencies.

☐ No, the City of_______ is not interested in participating.

Please sign below confirming your City's participation/approval or non-participation and return this form to JR Ranells via email at: jranells@ci.la-verne.ca.us **no later than Monday, March 18, 2013.**

Name: Daniel W. Keesey

Title: Director of Public Works

Signature: [signature]

Date: 3-14-13

THE CITY OF
POMONA

Public Works Department
Business Service Division

June 24, 2013

Ms. Renee Purdy
Section Chief of Regional Programs
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

RE: Notice of Intent - East San Gabriel Valley Watershed Management Area

Dear Ms. Purdy:

The City of Pomona ("City") has agreed to collaborate with the neighboring cities: Claremont, La Verne, Pomona, and San Dimas ("Member Agencies") to implement the requirements mandated by the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175). Collaborating with the aforementioned cities shall include developing a Watershed Management Plan (WMP) and Coordinated Integrated Monitoring Plan (CIMP).

City Council approved the filing of the Notice of Intent at the June 17, 2013 Council Meeting. Please find attached the City of Pomona Intent to Participate.

If you have any questions, please feel free to contact me at (909) 620.-3628.

Sincerely,

Julie Carver

Julie Carver
Environmental Programs Coordinator

Attachment: City of Pomona Intent to Participate

East San Gabriel River Watershed Group

Intent to Participate

The City of Pomona ("City") has agreed to collaborate with the neighboring cities of Claremont, La Verne, Pomona, and San Dimas ("Member Agencies") to implement the requirements mandated by the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175). Collaborating with the aforementioned cities shall include developing a Watershed Management Plan (WMP) **or** an Enhanced Watershed Management Plan (EWMP), as determined by a technical feasibility analysis. The City further agrees to share in the cost accrued to obtain a consultant to assess the technical feasibility of developing a WMP or a EWMP. The anticipated cost to obtain a technical consultant is estimated at **$20,000** to be equally divided among the Member Agencies. Furthermore, the City authorizes the City of La Verne to execute and manage the contract with the selected consultant.

☑ Yes, the City of Pomona agrees to partner with other Member Agencies in developing an Enhanced Watershed Management Plan (EWMP) or a Watershed Management Plan (WMP), including cost sharing for the technical feasibility analysis consultant as described above. With the understanding that **each** City remains individually responsible for associated violations in their jurisdiction that do not affect the other Member Agencies.

☐ No, the City of_______ is not interested in participating.

Please sign below confirming your City's participation/approval or non-participation and return this form to JR Ranells via email at: jranells@ci.la-verne.ca.us **no later than Monday, March 18, 2013.**

Name: Curtis Aaron

Title: Interim Public Works Director

Signature:

Date: March 18, 2013

RB-AR3297

CITY OF San Dimas CALIFORNIA

June 26, 2013

Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Attention: Ms. Renee Purdy

NOTICE OF INTENT TO DEVELOP THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT AREA WATERSHED MANAGEMENT PROGRAM (WMP) AND COORDINATED INTEGRATED MONITORING PROGRAM (CIMP)

Dear Ms. Purdy;

The Cities of Claremont, La Verne, Pomona, and San Dimas have joined together to form the East San Gabriel Valley Watershed Management Area (ESGV WMA) and are providing you this Notice of Intent (NOI) to develop a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) Plan to comply with the 2012 MS4 Permit otherwise known as Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175.

In compliance with interim MS4 Permit requirements, the City of San Dimas has drafted a Low Impact Development Ordinance and Green Streets Policy. These documents are attached in Draft form for your review and approval. Following Los Angeles Regional Board approval, Staff will work to finalize and implement these documents.

Your time and consideration is very much appreciated. Should you have any questions or need additional information, please contact Mr. Krishna Patel at (909) 394-6245 or via email at kpatel@ci.san-dimas.ca.us or Ms. Latoya Cyrus at (909) 394-6244 or via email at lcyrus@ci.san-dimas.ca.us.

Sincerely,

Blaine Michaelis

Blaine Michaelis
City Manager

City of San Dimas

cc: Krishna Patel, Director of Public Works

lc:06-13-24

East San Gabriel River Watershed Group

Intent to Participate

The City of San Dimas ("City") has agreed to collaborate with the neighboring cities of Claremont, La Verne, and Pomona ("Member Agencies") to implement the requirements mandated by the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175). Collaborating with the aforementioned cities shall include developing a Watershed Management Plan (WMP) **or** an Enhanced Watershed Management Plan (EWMP), as determined by a technical feasibility analysis. The City further agrees to share in the cost accrued to obtain a consultant to assess the technical feasibility of developing a WMP or a EWMP. The anticipated cost to obtain a technical consultant is estimated at **$20,000** to be equally divided among the Member Agencies. Furthermore, the City authorizes the City of La Verne to execute and manage the contract with the selected consultant.

☒ Yes, the City of San Dimas agrees to partner with other Member Agencies in developing an Enhanced Watershed Management Plan (EWMP) or a Watershed Management Plan (WMP), including cost sharing for the technical feasibility analysis consultant as described above. With the understanding that **each** City remains individually responsible for associated violations in their jurisdiction that do not affect the other Member Agencies.

☐ No, the City of San Dimas is not interested in participating.

Please sign below confirming your City's participation/approval or non-participation and return this form to JR Ranells via email at: jranells@ci.la-verne.ca.us **no later than Monday, March 18, 2013.**

Name: KRISHNA PATEL

Title: DIRECTOR OF PUBLIC WORKS

Signature:

Date: 3/18/2013

ATTACHMENT B

Memorandum

LARRY WALKER ASSOCIATES

Rebecca Winer-Skonovd, Senior Scientist

Paul Hartman, Senior Scientist

707 4th Street, Suite 200

Davis, CA 95616

530.753.6400

530.753.7030 fax

paulh@lwa.com

DATE:	April 25, 2013
TO:	LA Permit Group
SUBJECT:	DRAFT LID Ordinance
Cc:	Mack Walker and Sandy Mathews, LWA

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175 (MS4 Permit), requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are LID ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of this Order's Planning and Land Development Program within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order."

In the interest of meeting this requirement, a draft Low Impact Development (LID) Ordinance is provided as **Attachment A** of this technical memorandum. Guidance for using and understanding the draft LID Ordinance is provided below:

1. Some municipalities may have ordinances already in place associated with the stormwater quality program including a provision regarding Standard Urban Storm Water Mitigation Plan (SUSMP) requirements. In these situations the draft LID Ordinance is intended to replace the SUSMP portion of the municipalities' Stormwater and Urban Runoff Pollution Control (or similarly titled) ordinance. In cases where a municipality does not have an ordinance addressing SUSMP requirements then the draft LID Ordinance is a stand-alone document.
2. The draft LID Ordinance is designed to ensure compliance with LID requirements for development and redevelopment projects. The ordinance is meant to provide enforceable language for existing or proposed LID Guidance Manuals while also providing a compliance mechanism for new permit requirements.

3. The draft LID Ordinance addresses onsite retention and treatment requirements, but does not address other aspects of Planning and Land Development such as plan review fees or operation and maintenance (O&M) requirements. Plan review fees or O&M requirements may be addressed in other sections of Permittees' stormwater quality ordinances or incorporated by reference via a LID Manual.
4. The draft LID Ordinance was primarily based on the City of Los Angeles' LID Ordinance but modified to include the MS4 Permit requirements. Whenever possible and appropriate definitions from the MS4 Permit were included in the draft LID Ordinance.
5. The draft LID Ordinance is organized to include:
   a. Findings
   b. Definitions
   c. Stormwater Pollution Control Measures for Development Planning and Construction Activities.
6. Gray shading in the draft LID Ordinance indicates areas that are optional and/or areas where the Permittee may wish to provide more detail.
   a. In particular, this includes language that mentions hydromodification requirements and alternative compliance options and refers to the MS4 Permit for additional language. In these cases, references to the MS4 Permit were provided instead of detailed ordinance language to provide Permittees with flexibility to determine how hydromodification and alternative compliance (e.g., how to manage and track developer offsite mitigation) in the future.
7. The draft LID Ordinance contains language in brackets to indicate where a local program should insert its particular information. An example is the [CITY NAME].

ATTACHMENT A: DRAFT LID ORDINANCE

ORDINANCE NO.____________________

An ordinance amending [MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code to expand the applicability of the existing [NAME OF POST-CONSTRUCITON REQUIREMENTS – LIKELY "SUSMP" FOR MOST MUNICIPALITIES] requirements by imposing Low Impact Development (LID) strategies on projects that require building permits and/or encroachment permits.

Findings.

(A) The [CITY NAME] is authorized by Article XI, §5 and §7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity.

(B) The [CITY NAME] has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State.

(C) The city is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board--Los Angeles Region," (Order No. R4-2012-0175) which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit"). In order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program, the Municipal NPDES permit requires permittees to develop and implement a LID Ordinance.

(D) The [CITY NAME] has applied an integrated approach to incorporate wastewater, stormwater and runoff, and recycled water management into a single strategy through its Integrated Resources Plan.

(E) The [CITY NAME] is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social, and economic considerations.

(F) Urbanization has led to increased impervious surface areas resulting in increased water runoff causing the transport of pollutants to downstream receiving waters.

(G) The [CITY NAME] needs to take a new approach to managing rainwater and urban runoff while mitigating the negative impacts of development and urbanization.

(H) LID is widely recognized as a sensible approach to managing the quantity and quality of storm water and non-stormwater runoff by setting standards and practices to maintain or

restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

(I) It is the intent of the [CITY NAME] to replace the existing Standard Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under "Applicability." Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

[MUNICIPAL CODE SECTION REFERENCE(S)] of the [CITY NAME] Municipal Code is amended in its entirety to read as follows:

Definitions.

Except as specifically provided herein, any term used in this [SECTION REFERENCE] shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this chapter:

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater (Source: Order No. R4-2012-0175).

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Source: Order No. R4-2012-0175).

Best Management Practice (BMP) means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Source: Order No. R4-2012-0175).

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from: Order No. R4-2012-0175).

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Source: Order No. R4-2012-0175).

City means the [CITY NAME].

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Source: Order No. R4-2012-0175).

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Source: Order No. R4-2012-0175).

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Source: Order No. R4-2012-0175).

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency

projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Source: Order No. R4-2012-0175).

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation (Source: Order No. R4-2012-0175).

Flow-through BMPs means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Modified from: Order No. R4-2012-0175).

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Source: Order No. R4-2012-0175).

Hazardous Material(s) means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Source: Order No. R4-2012-0175).

Hydromodification means the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation. (Source: GCASP)

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Source: Order No. R4-2012-0175).

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Source: Order No. R4-2012-0175).

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff (Source: Order No. R4-2012-0175).

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

(40 CFR § 122.26(b)(8)) (Source: Order No. R4-2012-0175)

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program" (Source: Order No. R4-2012-0175).

Natural Drainage System means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Source: Order No. R4-2012-0175).

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Source: Order No. R4-2012-0175).

Non-Stormwater Discharge means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Source: Order No. R4-2012-0175).

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Source: Order No. R4-2012-0175).

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

Pollutant means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

(1) Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).

(2) Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).

(3) Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).

(4) Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

(5) Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities).

(6) Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065) (Source: Order No. R4-2012-0175).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Source: Order No. R4-2012-0175).

Receiving Water means "water of the United States" into which waste and/or pollutants are or may be discharged (Source: Order No. R4-2012-0175).

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

Regional Board means the California Regional Water Quality Control Board, Los Angeles Region.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Source: Order No. R4-2012-0175).

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils (Source: Order No. R4-2012-0175).

Routine Maintenance
Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Source: Order No. R4-2012-0175).

Storm Drain System means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the [CITY NAME].

Storm Water or Stormwater means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.

Stormwater Runoff means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

[MUNICIPAL CODE SECTION REFERENCE(S)] is amended to read as follows:

SEC. [X]. STORMWATER POLLUTION CONTROL MEASURES FOR DEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of previously adopted SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the [CITY NAME] to further define and adopt stormwater pollution control measures, to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, and to grant waivers or alternate compliance as allowed by the Municipal NPDES permit and collect fees from projects granted exceptions. . Except as otherwise provided herein, the [CITY NAME] shall administer, implement and enforce the provisions of this Section. Guidance documents supporting implementation of requirements in this Ordinance are hereby incorporated by reference, including SUSMP and LID Manuals.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of [SECTION NUMBER]:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(12) Any other project as deemed appropriate by the Director.

(D) Effective Date. The Planning and Land Development requirements contained in this Ordinance shall become effective XX days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in the Municipal NPDES Permit. Hydromodification requirements are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

c. When, as determined by the [APPROVING AGENCY], 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the [APPROVING AGENCY] to determine eligibility. Alternative compliance options are further specified in [NAME OF POST-CONSTRUCITON BMP HANDBOOK].

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit.

Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or
ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

f. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the [APPROVING AGENCY] to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(E) Other Agencies of the [CITY NAME]. All [CITY NAME] departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the [REPSONSIBLE AGENCY].

(F) Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

(G) Certification. The City Clerk shall certify to the passage of this ordinance and have it published in accordance with Council policy.

I hereby certify that this ordinance was passed by the Council of the [CITY NAME], at its meeting of ______________________.

[NAME], City Clerk

By ___________________________________

Deputy

Approved ______________________________

____
Mayor

Approved as to Form and Legality
[NAME], City Attorney

By ____
[NAME]
Deputy City Attorney

Date ___________________________________

File No. _________________________________

ATTACHMENT C

Memorandum

LARRY WALKER ASSOCIATES

Rebecca Winer-Skonovd, Senior Scientist

Malcolm Walker, P.E.

707 4th Street, Suite 200
Davis, CA 95616
530.753.6400
530.753.7030 fax
mackw@lwa.com

DATE: April 17, 2013

TO: LA Permit Group

SUBJECT: Green Streets Policy Recommendations

Cc: Sandy Mathews, LWA

The recently adopted National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) permit for the Los Angeles Region, Order No. R4-2012-0175[1] (MS4 Permit) requires Permittees that elect to participate in a Watershed Management Program or Enhanced Watershed Management Program (EWMP) to:

> "Demonstrate that there are green streets policies in place and/or commence development of a policy(ies) that specifies the use of green street strategies for transportation corridors within 60 days of the effective date of the Order and have a draft policy within 6 months of the effective date of the Order." (emphasis added)

A green streets policy is not defined within the MS4 Permit with the exception of a reference to USEPA's *Managing Wet Weather with Green Infrastructure: Green Streets* that is cited under the Planning and Land Development provision as guidance for street and road post-construction compliance. This reference is stated below:

"(1) Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

....

> (g) Street and road construction of 10,000 square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects."

[1] Adopted November 8, 2012.

In the absence of a formal MS4 Permit prescribed definition or guidance for green streets, the purpose of this technical memorandum is to summarize select green streets policies and identify a draft green street policy appropriate for the Los Angeles Permit Group consistent with the requirements of the MS4 Permit.

US EPA GREEN STREETS HANDBOOK SUMMARY

According to US EPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[2], the functional goals of green streets are to "provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, restore predevelopment hydrology to the extent possible, and provide environmentally enhanced roads."

The document details the design elements of green streets design which are summarized below:

- Street Widths: Minimize impervious cover by narrowing minimum street width requirements. Local governments should examine codes to determine if minimum streets widths can be reduced.
- Swales: Treat and convey runoff from streets using swales (versus standard curb and gutter). Local governments should ensure that codes, ordinances and standard specifications do not place swales at the bottom of the street development hierarchy with curb and gutter at the top.
- Bioretention Curb Extensions and Sidewalk Planters: Utilize bioretention areas in the form of planter boxes or curb extensions to treat runoff from streets and sidewalks. Local governments should modify standard specifications to incorporate the specifications for street bioretention areas.
- Permeable Pavement: Utilize permeable concrete, permeable asphalt, permeable interlocking concrete pavers, and grid pavers. Local governments should incorporate standard specifications for permeable pavement.
- Sidewalk Trees and Tree Boxes: Provide adequate soil volume and good soil mixture to extend the longevity and health of street trees. This can be accomplished through structural soils, root paths, "silva cells", and permeable pavement.

CITY OF SANTA MONICA GREEN STREETS

The City of Santa Monica's Urban Runoff Pollution Control Ordinance, passed in July 2010, includes language requiring "green transportation infrastructure." Green transportation infrastructure is defined as, "streets, roads and alleys that have post-construction BMPs to harvest runoff for storage and onsite use, including green streets and green alleys." The ordinance specifies that any municipal roadway reconstruction projects greater than or equal to $500,000 shall integrate green transportation infrastructure post-construction BMPs.

[2] EPA-833-F-08-009, December 2008

RB-AR3319

CITY OF LOS ANGELES GREEN STREETS

The City of Los Angeles' Board of Public Works adopted a Green Street initiative in May 2007 followed by an Official Green Street Policy adopted in July 2011. In addition to the formal adoption of the initiative and policy, the City also produced a report that provides design guidelines for green streets and green alleys and standard plans that incorporate green street BMPs into City approved construction details.

The Official Green Street Policy promotes the use of the public right-of-way as a large area where infiltration BMPs can be used to collect, retain, or detain stormwater runoff. The policy formalizes the Department of Public Works' efforts to pursue funds and implement green street BMPs in Capital Improvement Projects (CIPs). While the policy primarily applies to existing streets and roadways, the guidelines and standard plans can be used for the design of new streets or improving existing streets. The key recommendations from this policy are summarized below.

- Pursue funding for green street BMPs in CIPs whenever available and incorporate green street BMPs into CIP designs whenever funding guideline permits.
- Develop and adopt green street standard plans and guidelines.
- Develop an annual list of prioritized CIPs that include green street BMPs.
- Identify opportunities to implement green street BMPs as part of TMDL implementation plans.
- Conduct monitoring, as necessary, to evaluate the effectiveness of green street BMPs.
- Incorporate the green streets policy into appropriate design manuals and guidelines.
- Incorporate information from this policy into staff meetings and in-house training sessions.

CITY OF PORTLAND GREEN STREETS

The Portland City Council adopted a citywide policy for green streets in March 2007. The goal of the policy is to promote the use of green street BMPs in private and public development. The policy applies to new development and redevelopment and defines green streets as an amenity that handles stormwater onsite through the use of vegetated facilities, provides water quality benefits, can replenish groundwater, creates attractive streetscapes, connects neighborhoods, creates parks and wildlife habitats, and provides pedestrian and bicycle access. Key elements of the policy include:

- Incorporate green street BMPs into all City of Portland funded development projects that trigger the Stormwater Management Manual requirements. If green streets cannot be incorporated into the project, or only partial management is achieved, an offsite project or management fee is required.
- Require City of Portland funded development projects that occur in the right-of-way, but do not trigger the Stormwater Management Manual requirements, to pay into a Green Street fund at 1% of the construction costs for the project.

- Develop standards and incentives to encourage incorporation of green street BMPs into private development projects.
- Establish maintenance techniques and protocols for green street BMPs.
- Conduct ongoing monitoring to evaluate the effectiveness of green street BMPs.

SUMMARY OF EXISTING GREEN STREET POLICIES

A summary of existing green street polices are provided in the table below.

City	Applicability		Implementation Mechanism		
	CIP	New development/ redevelopment	Ordinance	Council adopted policy	Design guidance
City of Santa Monica	✓	✓	✓		
City of Los Angeles	✓			✓	✓
City of Portland	✓	✓		✓	✓

RECOMMENDATIONS

The three policies reviewed represent different approaches towards a green street policy. With that in mind a green street policy should at a minimum include the following provisions:

- Purpose – state the purpose of the policy and why it is needed.
- Application – clarify the type of transportation corridor projects that are subject to the policy.
- Amenities – identify the benefits from a green street policy.
- Retrofit scope –clarify the application of the policy to retrofit projects as they typically pose implementation challenges.
- Guidance – clarify what technical guidance will be applied to the policy.
- Training – identify training required to implement the policy.

A draft policy has been developed that capture these provisions and is attached to this memorandum.

Green Street Policy

Purpose

The City of [INSERT CITY NAME] [DEPARTMENT OF PUBLIC WORKS] shall implement green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The [DEPARTMENT OF PUBLIC WORKS] shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are major arterials as defined in the [CITY'S] General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

   Alternate A (without General Plan reference).

   Application. The [DEPARTMENT OF PUBLIC WORKS] shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are roadway projects that add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

Alternatives to the 10,000 sf threshold:
Use other mechanism in lieu of the 10,000 sf of impervious area to determine threshold for green streets requirements. As an example, City of Santa Monica utilizes construction costs (>$500,000) as the trigger for green street BMPs. Another option would be to establish a threshold of either the 10,000 sf impervious area or construction cost >$500,000 whichever is smaller.

Alternatives to the major arterial:
Use another General Plan defined street classification, such as secondary arterials, and define the transportation corridor as all that type of street and larger arterials.

B. Amenities. The [DEPARTMENT OF PUBLIC WORKS] shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The [DEPARTMENT OF PUBLIC WORKS] shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[3], or equivalent guidance developed by the [DEPARTMENT OF PUBLIC WORKS] for use in public and private developments.

D. Retrofit Scope. The [DEPARTMENT OF PUBLIC WORKS] shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the [CITY ENGINEER] based on the availability of adequate funding.

E. Training. The [DEPARTMENT OF PUBLIC WORKS] shall incorporate aspects of green streets into internal annual staff trainings.

[3] EPA-833-F-08-009, December 2008.

ATTACHMENT D

Low Impact Development (LID) Ordinance

AN ORDINANCE regulating stormwater runoff for the protection of waterways and sensitive areas in the City of San Dimas.

ARTICLE I. TITLE, FINDINGS, PURPOSE

Section 1.01 Title

This ordinance shall be known as the "City of San Dimas Low Impact Development (LID) Ordinance" and may be so cited.

Section 1.02 Findings

The City of San Dimas (hereinafter referred to as "City") finds that:

- Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.
- Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.
- Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.
- Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.
- Increase stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.
- Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.
- Adopting the standards, criteria, and procedures contained in this ordinance and implementing the same will address many of the deleterious effects of stormwater runoff.

Section 1.03 Purpose

It is the purpose of this ordinance to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

(1) Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.
(2) Minimize the adverse impacts from stormwater runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of waterbodies.
(3) Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.
(4) Maintain existing riparian buffers and enhance riparian buffers when possible.
(5) Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs),

(including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs.

(6) Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

(7) Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

(a) On-site infiltration, bioretention and/or rainfall harvest and use.

(b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

Section 1.04 Construction of Language

For purposes of this Ordinance, the following rules of construction apply:

A. Terms not specifically defined in this Ordinance shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this Ordinance are complex in nature. Effort has been made to simplify terms to the extent the subject matter permits.

ARTICLE II: DEFINITIONS

Section 2.01 Definition of Terms

The following terms, phrases, words, and derivatives shall have the meaning defined below:

"**Applicant**" means any person proposing or implementing the development of land.

"**Beneficial uses**" means the existing or potential uses of receiving waters in the permit area as designated by the Regional Water Board in the Basin Plan.

"**BMP or best management practice**" means a practice, or combination of practices and design criteria that comply with the California Association of Stormwater Quality (CASQA) Guidebook of BMPs or equivalent practices and design criteria that accomplish the purposes of this Ordinance (including, but not limited to minimizing stormwater runoff and preventing the discharge of pollutants into stormwater) as determined by the City Engineer, Environmental Coordinator, City's consultant (and/or, where appropriate, the standards of the General Plan).

"**City**" means the City of San Dimas

"**Conveyance facility**" means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

"**Design engineer**" means the registered professional engineer responsible for the design of the stormwater management plan.

"**Detention system**" means a system which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

"**Development**" means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"**Engineered site grading plan**" means a sealed drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alterations of topography, alterations of watercourses, flow directions of stormwater runoff, and proposed stormwater management and measures which is prepared to ensure that the objectives of this Ordinance are met.

"**Environmentally sensitive area (ESA)**" means an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments (California Public Resources Code § 30107.5). Areas subject to storm water mitigation requirements are: areas designated as Significant Ecological Areas by the County of Los Angeles (Los Angeles County Significant Areas Study, Los Angeles County Department of Regional Planning (1976) and amendments); areas designated as a Significant Natural Area by the California Department of Fish and Wildlife's Significant Natural Areas Program, provided that areas have been field verified by the Department of Fish and Wildlife; areas listed in the Basin Plan as supporting the "Rare, Threatened, or Endangered Species (RARE)" beneficial use; and areas identified by the City of San Dimas as environmentally sensitive.

"**Grading**" means any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

"**Hillside**" means any property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is on average 25% or greater and where grading contemplates cut or fill slopes. For the purposes of this Ordinance the average slope of a parcel to be subdivided shall be determined according to the **formula**:

$$S = \frac{.00229}{A} IL$$

where:

1. "S" is the average slope in percent;
2. "I" is the contour interval in feet;
3. "L" is the combined length of contour lines in scale feet within the parcel; and
4. "A" is the area in acres of the parcel to be subdivided.

"**Impervious surface**" means a surface that does not allow stormwater runoff to slowly percolate into the ground.

"**Infiltration**" means the percolation of water into the ground, expressed in inches per hour.

"**Maintenance agreement**" means a binding agreement that sets forth the terms, measures, and conditions for the maintenance of stormwater systems and facilities.

"**Natural drainage system**" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.

"**Offsite facility**" means all or part of a drainage system that is located partially or completely off the development site which it serves.

"**Peak rate of discharge**" means the maximum rate of stormwater flow at a particular location following a storm event, as measured at a given point and time in cubic feet per second (CFS).

"**Plan**" means written narratives, specifications, drawings, sketches, written standards, operating procedures, or any combination of these which contain information pursuant to this Ordinance.

"**Retention**" means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands and in which water is removed through infiltration and/or evaporation processes.

"**Runoff**" means the portion of precipitation which flows over the land. During dry weather it is typically comprised of base flow (either contaminated with pollutants or uncontaminated) and nuisance flow.

"**Sediment**" means mineral or organic particulate matter that has been removed from its site of origin by the processes of soil erosion, is in suspension in water, or is being transported.

"**A significant ecological area (SEA)**" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity for the purpose of protecting biotic diversity as part of the Los Angeles County General Plan.

"**Storm drain**" means a conduit, pipe, swale, natural channel, or man-made structure which serves to transport stormwater runoff. Storm drains may be either enclosed or open.

"**Stormwater BMP (Best Management Practice)**" means any facility, structure, channel, area, process or measure which serves to control stormwater runoff in accordance with the purposes and standards of this Ordinance. Also see BMP or Best Management Practice.

"**Stormwater Quality Design Volume (SWQDv)**" means the runoff from:

a. The 0.75-inch, 24-hour rain event or
b. The 85th percentile, 24-hour rain event, as determined from the Los Angeles County 85th percentile precipitation isohyetal map, whichever is greater.

"**Swale**" means a defined contour of land with gradual slopes that transport and direct the flow of stormwater.

"**Watercourse**" means any natural or manmade waterway or other body of water having reasonably well defined banks. Rivers, streams, creeks, brooks, and channels, whether continually or intermittently flowing, as well as lakes and ponds are watercourses for purposes of stormwater management.

"**Watershed**" means an area in which there is a common outlet into which stormwater ultimately flows, otherwise known as a drainage area.

"**Wetlands**" means land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh, as defined by state law.

ARTICLE III. NEW DEVELOPMENT AND REDEVELOPMENT PROJECT PROVISIONS

Section 3.01 Applicability

These procedures and standards set forth in this Ordinance and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City of San Dimas to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(a) All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

(b) Industrial parks 10,000 square feet or more of surface area.

(c) Commercial malls 10,000 square feet or more surface area.

(d) Retail gasoline outlets 5,000 square feet or more of surface area.

(e) Restaurants 5,000 square feet or more of surface area.

(f) Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(g) Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City of San Dimas Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(h) Automotive service facilities (*as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof*) 5,000 square feet or more of surface area.

(i) Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

(j) Projects located in or within 200ft of, or discharging directly to a Significant Ecological Area (SEA), *such as: San Dimas Canyon / San Antonio Wash* where the development will:

   i. Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and

   ii. Create 2,500 square feet or more of impervious surface area

(k) Single-family hillside homes. During the construction of a single family hillside home, the following measures shall be considered to the maximum extent practicable:

   i. Conserve natural areas.

   ii. Protect slopes and channels.

   iii. Provide storm drain system stenciling and signage.

   iv. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

   v. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Ordinance for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(a) Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site

i. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been not subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site

ii. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development

iii. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

iv. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

Section 3.02 Project Performance Criteria

All development projects that fit the project criteria listed above in Section 3.01 of this ordinance shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) (as defined above) on-site through:

1. Minimizing the impervious surface area; and
2. Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

Section 3.03 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

(1) On-site Biofiltration – Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site, as calculated by Equation 1 below:

Equation 1:
Bv = 1.5 * [SWQDv – Rv]

Where:

Bv = biofiltration volume

SWQDv = the stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, *whichever is greater.*

Rv = volume reliably retained on-site

(2) Offsite Infiltration – Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:
M*v* = 1.0 * [SWQDv – Rv]

Where:

M*v* = mitigation volume

SWQDv = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

Rv = the volume of storm water runoff reliably retained on-site.

(3) Offsite Project - Retrofit Existing Development – Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

(4) Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

ARTICLE IV. PLAN REVIEW REQUIREMENTS, FEES, AND MAINTENANCE

Section 4.01 Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding a recommendation for approval, and will state the changes necessary to obtain approval.
2. If Staff determines that all of the required information has not been received, the proprietor may request that the matter be tabled to allow for the submittal of the required information.
3. If all of the required information has been received, Staff shall recommend approval, recommend approval with conditions, or recommend denial of the Stormwater Plan, including

waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

4. If the plan is approved, the City will require the following:

   a. The applicant shall provide copies of all necessary state, federal, or local permits relating to stormwater management to the City.

   b. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Recorder prior to issuance of occupancy.

   A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either:

   - A signed statement from the public entity assuming responsibility for BMP maintenance; or
   - Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or
   - Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association; or

   c. The applicant shall post cash or a letter of credit in an amount not less that __ percent of the cost of the stormwater facilities for projects of less than $_______ or ___ percent of the cost for projects over $________. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, or until construction on all phases in the development are completed, whichever time period is longer.

   d. This deposit shall be returned to the applicant (in the case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

   e. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm drains and stormwater BMPs shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

Section 4.02 Review Fees

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of San Dimas including the costs of on-site inspections.

Section 4.03 Maintenance Agreement

A. Purpose of Maintenance Agreement

The purpose of the maintenance agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

B. Maintenance Agreement Required

1. A maintenance agreement shall be submitted to the City, for review by the City Engineer and his/her designee and, if necessary, City Attorney. The Designers may select any combination of stormwater BMPs which meet the performance standards provided this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any

amendment, revision, or reissuance thereof. A formal maintenance plan shall be included in the maintenance agreement.

C. Maintenance Agreement Provisions

1. The maintenance agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPs, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance shall be provided by the party responsible for maintenance to the City of San Dimas at least 14 days in advance of commencing work.
2. The maintenance agreement shall be binding on all subsequent owners of land served by the stormwater BMPs.
3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this ordinance and/or as required in the approved maintenance agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 8.16 of the municipal code. (Ord. 1011 § 1 (part), 1994).

A fully executed "Maintenance Covenant for permanent BMP's Requirements" shall be recorded with the L.A. County Registrar/Recorder and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include an exhibit that details the installed treatment control devices as well as any site design or source control Best Management Practices (BMPs) for post construction. The information to be provided on this exhibit shall include, but not be limited to:

- 8 ½" x 11" exhibits with record property owner information.
- Types of BMPs (i.e., site design, source control and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.
- Clear depiction of location of BMPs, especially those located below ground.
- A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.
- Agreement to retain documentation of proper maintenance for a period of two (2) years.
- Understanding that documentation of proper maintenance must be presented to the City upon request.

ARTICLE V ENFORCEMENT

Any person violating any provision of this ordinance shall be responsible for a municipal civil infraction and subject to the City's progressive enforcement policy as detailed in the City Code.

Section 5.01 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Ordinance, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this ordinance or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

Section 5.02 Failure to Comply; Completion

In addition to any other remedies, should any owner fail to comply with the provisions of this Ordinance, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

Section 5.03 Emergency Measures

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/ or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Ordinance, and shall promptly reimburse the City for all of such costs.

Section 5.04 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this Ordinance. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

ATTACHMENT E

CITY OF San Dimas CALIFORNIA

Green Streets Policy

Purpose

The City of San Dimas (City) shall implement green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of San Dimas shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are major arterials as defined in the City's General Plan. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of San Dimas shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The City of San Dimas shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the City of San Dimas for use in public and private developments.

D. Retrofit Scope. The City of San Dimas shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of San Dimas shall incorporate aspects of green streets into internal annual staff trainings.

[1] EPA-833-F-08-009, December 2008.

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF LA VERNE AND PARTICIPATING AGENCIES
(CITIES OF CLAREMONT, POMONA, AND SAN DIMAS)

REGARDING THE ADMINISTRATION AND COST SHARING FOR DEVELOPMENT OF THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT PROGRAM (WMP) AND COORDINATED INTEGRATED MONITORING PROGRAM (CIMP)

This Memorandum of Understanding (MOU), made and entered into as of the date of the last signature set forth below by and between the CITY OF LA VERNE (Lead Agency), a municipal corporation, and PARTICIPATING AGENCIES (Cities of Claremont, Pomona, and San Dimas). Collectively, these entities shall be known herein as "Member Agencies" or individually as "Member Agency."

WITNESSETH

WHEREAS, the Los Angeles Regional Water Quality Control Board (Regional Board) adopted the National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit (MS4 Permit) (Order No. R4-2012-0175); and

WHEREAS, the MS4 Permit became effective on December 28, 2012, and requires that the Los Angeles County Flood Control District, County of Los Angeles, and 84 of the 88 cities (excluding Avalon, Long Beach, Palmdale, and Lancaster) within the County of Los Angeles comply with the prescribed elements of the MS4 Permit; and

WHEREAS, the Member Agencies have agreed to collaborate on the compliance of certain elements of the MS4 Permit and have agreed to a cost sharing formula based on Land Area within the San Gabriel Watershed with a Base Fee, attached hereto as Exhibit A and made part of this MOU; and

WHEREAS, the Member Agencies agree that each shall assume full and independent responsibility for ensuring its own compliance with the MS4 Permit despite the collaborative approach of this MOU; and

WHEREAS, the Member Agencies collaboratively prepared a final Scope of Work and Request for Proposal to obtain a Consultant to assist the Member Agencies in complying with certain elements of the MS4 Permit; and

WHEREAS, the Member Agencies propose for the Consultant to prepare and deliver a Final Watershed Management Plan (WMP), and a Coordinated Integrated Monitoring Plan (CIMP) (collectively, PLANS) in compliance with certain elements of the MS4 Permit, at a total cost of approximately four hundred seventy thousand dollars ($470,000); and

WHEREAS, the Member Agencies have determined that hiring a Consultant to prepare and deliver the PLANS will be beneficial to the Member Agencies and they desire to participate and will provide funding in accordance with the cost distribution on Exhibit A; and

WHEREAS, the Lead Agency will act on behalf of the Member Agencies in the administration of the Consultant services agreements for the PLANS.

NOW, THEREFORE, in consideration of the mutual benefits to be derived by the Member Agencies, and of the promises contained in this MOU, the Member Agencies agree as follows:

(1) Recitals: The recitals set forth above are fully incorporated as part of this MOU.

(2) Purpose: The purpose of this MOU is to cooperatively fund the preparation and submittal of the PLANS to the Regional Board.

(3) Voluntary: This MOU is voluntarily entered into for the purpose of preparing and submitting the PLANS to the Regional Board.

(4) Terms: This MOU shall become effective on the latest date of execution by a Member Agency and shall remain in effect until (i) the Regional Board's final approval date of the last outstanding portion of the PLANS, (ii) the Lead Agency has provided the Member Agencies with an accounting as set forth in paragraph (5)e, and (iii) the Member Agencies have paid all outstanding invoices.

(5) The Lead Agency shall provide the services and performance as follows:

a. Upon final execution of this MOU, the Lead Agency shall invoice the Member Agencies for their share of the cost for the preparation and delivery of the PLANS as described in Exhibit A.

a.b. Invoicing by the Lead Agency to Member Agencies shall occur only when the Lead Agency receives invoice from the Consultant for an equal amount.

b.c. Solicit proposals for, award, and administer a Consultant contract(s) for the preparation and delivery of the PLANS in accordance with the Scope of Work.

c.d. Utilize the funds deposited by the Member Agencies only for the payment of the Consultant contract for the PLANS.

d.e. Provide the Member Agencies with an electronic copy of the draft and final PLANS within five (5) days of receipt from the Consultant.

e.f. Provide an accounting upon the early termination of this MOU pursuant to paragraph (6)p or 60 days after the date the Regional Board gives final approval for the last outstanding portion of the PLANS. The Lead Agency shall return the unused portion of all funds deposited with the Lead Agency in accordance with the cost allocation formula set forth in Exhibit A.

f.g. Notify the PARTIES if the actual cost of the preparation of the PLANS will exceed the cost estimates shown on Exhibit A and obtain approval of the increase from all Member Agencies. Upon approval of the cost increase by the all Member Agencies, the Lead Agency will invoice Member Agencies per cost allocation formulas in Exhibit A.

(6) THE MEMBER AGENCIES FURTHER AGREE:

a. To make a full faith effort to cooperate with one another to achieve the purposes of this MOU by providing information about project opportunities, reviewing deliverables in a timely manner, and informing their respective administrators, agency heads, and/or governing bodies.

b. To fund the cost of the preparation and delivery of the PLANS and to pay the Lead Agency for the preparation and delivery of the PLANS within thirty (60 30) days of receiving an invoice. Funding shall be as specified in Exhibit A.

c. To set up a Purchase Order for payment to the Lead Agency upon final execution of a contract agreement with selected consultant in accordance with the cost allocation formula in Exhibit A. Each Member Agency will also provide the Lead Agency a copy of said Purchase Order.

c.d. To grant reasonable access rights and entry to the CITY Lead Agency and the Consultant during the terms of this MOU to the Member Agency's facilities (i.e. storm drains, channels, catch basins, properties, etc.) (Collectively, THE FACILITIES) to achieve the purposes of this MOU, provided, however, that prior to entering any Member Agency's FACILITIES, the Lead Agency or their Consultant shall secure permission of entry from the applicable Member Agency.

d.e. The Lead Agency shall require the Consultant retained pursuant to this MOU to agree to indemnify, defend, and hold harmless each Member Agency, its special districts, elected and appointed officers, employees, and agents, from and against any and all liability, including but not limited to demands, claims, actions, fees, costs, and expenses (including attorney and expert fees), arising from or connected with the Consultant's performance of its agreement with the Lead Agency. In addition, the Lead Agency shall require the Consultant to carry, maintain, and keep in full force and effect an insurance policy or policies, and each Member Agency, its officers, employees, attorneys, and designated volunteers shall be named as additional insured's on the policy(ies) with respect to liabilities arising out of the Consultant's work.

e.f. Each Member Agency shall indemnify, defend, and hold harmless each other Member Agency, including its special districts, elected and appointed officers, employees, and agents, from and against any and all liability, including but not limited to demands, claims, actions, fees, costs, and expenses (including attorney and expert witness fees), arising from or connected with the respective acts of each Member Agency arising from or related to this MOU; provided, however, that no Member Agency shall indemnify another Member Agency for that Member Agency's own negligence or willful misconduct.

f.g. In light of the provisions of Section 895.2 of the Government Code of the State of California imposing certain tort liability jointly upon public entities solely by reason of such entities being parties to an agreement (as defined in Section 895 of said Code), each of the Member Agencies hereto, pursuant to the authorization contained in Section 895.4 and 895.6 of said Code, shall assume the full liability imposed upon it or any of its officers, agents, or employees, by law for injury caused by any act or omission occurring in the performance of this MOU to the same extent that such liability would be imposed in the absence of Section 895.2 of said Code. To achieve the above stated purpose, each Member Agency indemnifies, defends, and holds harmless each other Member Agency for any liability, cost, or expense that may be imposed upon such other Member Agency solely by virtue of said Section 895.2. The provisions of Section 2778 of the California Civil Code are made a part hereof as if incorporated herein.

g.h. The Member Agencies are, and shall at all times remain as to each other, wholly independent entities. No Member Agency to this MOU shall have power to incur any debt, obligation, or liability on behalf of any other Member Agency unless expressly provided to the contrary by this MOU. No employee, agent, or officer of a Member Agency shall be deemed for any purpose whatsoever to be an agent, employee, or officer of another Member Agency.

h.i. Any notices, bills, invoices, or reports relating to this MOU, and any request, demand, statement, or other communication required or permitted hereunder shall be in writing and shall be delivered to the Member Agencies at the addresses set forth in Exhibit B.

i.j. This MOU is governed by, interpreted under, and construed and enforced in accordance with the laws of the State of California.

j.k. If any provision of this MOU shall be determined by any court to be invalid, illegal, or unenforceable to any extent, the remainder of this MOU shall not be affected, and this MOU shall be construed as if the invalid, illegal, or unenforceable provision had never been contained in this MOU.

k.l. All Member Agencies have been represented by counsel in the preparation and negotiation of this MOU. Accordingly, this MOU shall be construed according to its fair language. Any ambiguities shall be resolved in a collaborative manner by the Member Agencies and shall be rectified by amending this MOU as described in paragraph (6)m.

l.m. Each of the persons signing below on behalf of a Member Agency represents and warrants that he or she is authorized to sign this MOU on behalf of such Member Agency.

m.n. Each Member Agency shall have no financial obligation to the other Member Agencies of this MOU, except as herein expressly provided.

n.o. The terms and provisions of this MOU may not be amended, modified, or waived, except by an instrument in writing signed by all Member Agencies.

o.p. Early Termination or Withdrawal

1. This MOU may be terminated upon the express written agreement of all Member Agencies. If this MOU is terminated, all Member Agencies must agree on the equitable redistribution of remaining funds deposited, if there are any, or payment of invoices due at the time of termination. Completed work shall be owned by all Member Agencies. Rights to uncompleted work by the Consultant still under contract will be held by the Member Agency or Member Agencies who fund the completion of such work.

2. A Member Agency may withdraw from this MOU upon sixty (60) days written notice to the other Member Agencies, subject to full payment of any current and future invoicing from Lead Agency prior to or during the 60-day notice period for its share of the cost set forth in Exhibit A. The effective withdrawal date shall be the sixtieth (60^{th}) day after CITY receives the withdrawing Member Agency's notice to withdraw from this MOU. Withdrawal from this MOU does not release any Member Agency from the obligations set forth in the MS4 Permit.

3. A withdrawing Member Agency will not be allowed refunds for tasks, projects or studies already underway in which funds have been obligated. Upon completion of tasks, projects or studies undertaken, if any funds are not expended, a refund

of the share of the balance shall be paid within sixty thirty (6030) days[A1] thereafter to the withdrawing PermitteeMember Agency.

4. Failure to comply with the terms of this MOU is a breach of the MOU. If a breach is not cured within sixty (60) days after receiving a notice to cure the breach by the Lead Agency, Member Agency's in breach may be terminated from this MOU by a majority vote of the Member Agencies.

5. A Member Agency terminated from this MOU will not be allowed refunds for tasks, projects or studies already underway in which funds have been obligated. Upon completion of tasks, projects or studies undertaken, if any funds are not expended, a refund of the share of the balance shall be paid within thirty (30) days thereafter to the Member Agency terminated from this MOU.

4.6. A Member Agency terminated from this MOU is liable for full payment of any current and future invoicing from Lead Agency, for costs incurred prior to termination, according to its share of the cost set forth in Exhibit A.

7. Non-compliance with MS4 Permit Requirements. Any Member Agency found in non-compliance with the conditions of the MS4 Permit within their jurisdictional responsibilities shall be solely liable for any assessed penalties, pursuant to Section 13385 of the Water Code.

IN WITNESS WHEREOF, the Member Agencies hereto have caused this MOU to be executed by their duly authorized representatives and affixed as of the date of signature of the Member Agencies:

CITY OF LA VERNE

By ______________________________ ______________________

DON KENDRICK, MAYOR Date

ATTEST:

By ______________________________ ______________________

LUPE ESTRELLA, DEPUTY CITY CLERK Date

APPROVED AS TO FORM:

By ______________________________

ROBERT KRESS, CITY ATTORNEY

CITY OF CLAREMONT

By ____________________________ __________________
OPANYI NASIALI, MAYOR Date

ATTEST:

By ____________________________ __________________
LYNNE FRYMAN, CITY CLERK Date

APPROVED AS TO FORM:

By ____________________________ __________________
CITY ATTORNEY Date

CITY OF POMONA

By ______________________________ ______________________
ELLIOTT ROTHMAN, MAYOR Date

ATTEST:

By ______________________________ ______________________
ANTHONY J. MEJIA, CITY CLERK Date

APPROVED AS TO FORM:

By ______________________________ ______________________
ARNOLD ALVAREZ-GLASMAN, CITY ATTORNEY Date

CITY OF SAN DIMAS

By ______________________________ ____________________
CURTIS W. MORRIS, MAYOR Date

ATTEST:

By ______________________________ ____________________
KENNNETH DURAN, ASSISTANT CITY
MANAGER /TREASURER CITY CLERK Date

APPROVED AS TO FORM:

By ______________________________ ____________________
J. KENNNETH BROWN, CITY ATTORNEY Date

EXHIBIT A

East San Gabriel Valley Watershed WMP Funding Contributions

Total Contract Costs

Project Component		Cost
Consultant Contract for WMP Development		$ 370,875
	WMP Subtotal	**$ 370,875**
Consultant Contract for CIMP Development		$ 98,820
	CIMP Subtotal	**$ 98,820**
	Total	**$ 469,695**

Cost Allocation Formula

The responsibility for payment of all shared costs of the PLANS shall be distributed among the PARTIES (i.e., the Cities of Claremont, La Verne, Pomona, and San Dimas) as follows:

Cost Sharing Formula - Land Area Percentage in the SG Watershed plus **base fee of 50%**					
East San Gabriel Valley Watershed Management Area					
Jurisdiction	Sq. Miles[1]	% Land Area	Base fee **50%**	Distributed Area Costs[2]	Total
Claremont	9.047	0.2094	**$58,711,0.88**	$49,172.96	$107,884.84
La Verne	8.43	0.1951	**$58,711,0.88**	$45,819.40	$104,531.27
Pomona	12.389	0.2867	**$58,711,0.88**	$67,337.66	$126,049.54
San Dimas	13.342	0.3088	**$58,711,0.88**	$72,517.48	$131,229.36
Total	43.208	1.0000	**$2340,847.50**	$234,847.50	$4069,695.00

Sample Plan Cost is based on a $469,695 estimated plan cost
Sample Plan Cost is $234,847.50 after subtraction of the 50% base fee

(1) Excludes the U.S. Forestry in Claremont, La Verne, and San Dimas, and excludes the Santa Ana River Watershed in Claremont and Pomona (will be addressed in CBRP).
(2) Total Cost minus Fifty-Percent (50%) Base Fee

Cost Allocation Formula is: Distributed Area Cost = Remaining Total Sample Cost After Subtraction of Base Fee x Agency Percent of Land Area

EXHIBIT B

East San Gabriel Valley Watershed WMP
Responsible Agencies Representatives

1. City of Claremont
   207 Harvard Avenue
   Claremont, CA 91711
   Party Representative: Loretta Mustafa, Acting City Engineer
   E-mail: lmustafa@ci.claremont.ca.us
   Phone: (909) 399-5480

2. City of La Verne
   3660 "D" Street
   La Verne, CA 91750
   Party Representative: JR Ranells
   E-mail: jranells@ci.pomona.ca.us
   Phone: (909) 596-8710

3. City of Pomona
   505 South Garey Avenue
   Pomona, CA 91766
   Party Representative: Julie Carver
   E-mail: Julie_Carver@ci.pomona.ca.us
   Phone: (909) 620-3628

4. City of San Dimas
   245 East Bonita Avenue
   San Dimas, 91773
   Party Representative: Latoya Cyrus
   E-mail: lcyrus@ci.san-dimas.ca.us
   Phone: (909) 394-6244

CITY OF CLAREMONT

By OKNasiali

OPANYI NASIALI, MAYOR

Sept. 3, 2013

Date

ATTEST:

By Lynne E. Fryman

LYNNE FRYMAN, CITY CLERK

September 3, 2013

Date

APPROVED AS TO FORM:

By

CITY ATTORNEY

Date

CITY OF LA VERNE

By ______________________________ August 20, 2013
DON KENDRICK, MAYOR Date

ATTEST:

By ______________________________ August 20, 2013
~~LUPE ESTRELLA, DEPUTY CITY CLERK~~
Jeannette A. Vagnozzi, City Clerk Date

APPROVED AS TO FORM:

By ______________________________
ROBERT KRESS, CITY ATTORNEY

CITY OF POMONA

By ______________________ 9-30-2013
ELLIOTT ROTHMAN, MAYOR Date

ATTEST:

By Sandra Medina, Interim 10-1-2013
for ANTHONY J. MEJIA, CITY CLERK Date

APPROVED AS TO FORM:

By ______________________ 8/21/13
ARNOLD ALVAREZ-GLASMAN, CITY ATTORNEY Date

CITY OF SAN DIMAS

By ______________________________ 8-13-13
CURTIS W. MORRIS, MAYOR Date

ATTEST:

By ______________________________ 8-14-13
KENNNETH DURAN, ASSISTANT CITY MANAGER /TREASURER CITY CLERK Date

APPROVED AS TO FORM:

By ______________________________ 8-13-13
J. KENNNETH BROWN, CITY ATTORNEY Date

October 23, 2013

East San Gabriel Valley (ESGV) Watershed Management Area (WMA) Group
(See Distribution List)

REVIEW OF NOTIFICATION OF INTENT (NOI) TO DEVELOP A WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear East San Gabriel Valley Watershed Management Area Group Participants:

Regional Board staff reviewed the NOI to prepare a WMP that the East San Gabriel Valley Watershed Management Area Group submitted to the Regional Board on June 27, 2013; according to the NOI, the participants in the East San Gabriel Valley Watershed Management Area Group are the Cities of Claremont, La Verne, Pomona, and San Dimas. Upon review, Regional Board staff determined the NOI meets the notification requirements of Part VI.C of Order No. R4-2012-0175, *Waste Discharge Requirements for MS4 Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, Order).

As you are aware, the Order allows permittees the option to submit to the Regional Board for approval an NOI to prepare a WMP. Preparing a WMP allows permittees to implement the requirements of the Order on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Implementing a WMP allows permittees to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E (Total Maximum Daily Load Provisions) and Attachments L through R, by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures) of the Order.

The East San Gabriel Valley Watershed Management Area Group must submit to the Regional Board for review and approval a draft WMP for the East San Gabriel River watershed no later than June 28, 2014. Until Regional Board staff approves the East San Gabriel Valley Watershed Management Area Group WMP, each East San Gabriel Valley Watershed Management Area Group participant must do the following:

1. Continue to implement all the watershed control measures in their corresponding storm water management programs, including actions within each of the six

categories of minimum control measures consistent with Title 40 Code of Federal Regulations Section 122.26(d)(2)(iv) and Part VI.C.4.d.i of the Order.

2. Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act Section 402(p)(3)(B)(ii) and Part VI.C.4.d.ii of the Order.
3. Implement watershed control measures, including those identified in existing TMDL implementation plans, to ensure MS4 discharges achieve compliance with interim and final trash WQBELs and all other final WQBELs and receiving water limitations pursuant to Part VI.E and set forth in Attachments L through Q by the applicable compliance deadlines occurring prior to approval of the WMP per Part VI.C.4.d.iii of the Order.
4. Target implementation of watershed control measures listed above to address known contributions of pollutants from MS4 discharges to receiving waters.
5. Meet all interim and final deadlines for development of a WMP.

If you have any questions, please contact Ms. Tracy Woods of the Storm Water Permitting Unit by electronic mail at Tracy.Woods@waterboards.ca.gov or by phone at (213) 620-2095. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Loretta Mustafa, City of Claremont
JR Ranells, City of La Verne
Julie Carver, City of Pomona
Latoya Cyrus, City of San Dimas
Dave Smith, US EPA
Walt Shannon, State Water Resources Control Board – Storm Water Section
Jennifer Fordyce, State Water Resources Control Board – Office of Chief Counsel

ECM#

Memorandum

Reni Keane-Dengel
720 Wilshire Blvd, Suite 204
Santa Monica, CA 90401
619.316.5135
ReniK-D@lwa.com

Chris Minton
8 Boston Street, Ste 3
Seattle, WA 98109
206.257.0610
ChrisM@LWA.com

DATE: June 9, 2014

TO: East San Gabriel Valley Watershed Management Group

COPY TO:

SUBJECT: **MS4 Map/Database Compilation to Meet the Outfall Based Monitoring Requirements of the Monitoring and Reporting Plan for Order R4-2012-0175**

This memorandum explains the compiled municipal separate storm sewer system (MS4) map/database information as required in the Outfall Based Monitoring section of the Monitoring and Reporting Plan (MRP) for Order R4-2012-0175. To meet the requirements of Part VII.A of the MRP, a map(s) and/or database of the MS4's storm drains, channels, and outfalls must be submitted with the Coordinated Integrated Monitoring Program (CIMP) and include detailed information (as described in the Order, pages E-20 and E-21). The compiled information, in the form of geographic information system (GIS) data and an excel spreadsheet summarizing the compiled information, will be submitted with the CIMP. The required information includes:

1. Surface water bodies within the Permittee(s) jurisdiction;
2. Sub-watershed Hydrologic Unit Code (HUC) 12 boundaries;
3. Land use overlay;
4. Effective Impervious Area (EIA) overlay (if available);
5. Jurisdictional boundaries;
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes);
7. The location of all dry weather diversions;
8. The location of all major MS4 outfalls within the Permittee's jurisdictional boundary. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map;
9. Notation of outfalls with significant non-storm water discharges (to be updated annually);
10. Storm drain outfall catchment areas for each major outfall within the Permittee(s) jurisdiction; and
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a) Ownership;
    b) Coordinates;
    c) Physical description;

d) Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time;
e) Determination of whether the outfall conveys significant non-storm water discharges; and
f) Storm water and non-storm water monitoring data.

Each year, the map(s) and associated database are to be updated to incorporate the most recent characterization data for outfalls with significant non-storm water discharge. Detailed below, are the GIS data used to meet the MS4 map(s)/database requirements. In addition, the files that will be submitted are listed in **Table 1**.

MRP Part VII.A. 1: Surface Water Bodies within the Permittee(s) Jurisdiction

Two layers, a Streams layer and a Lakes layer, which were used by the Los Angeles Regional Water Quality Control Board (Regional Board) during their Basin Plan revision process, were clipped by the boundary for the ESGV Group area.

MRP Part VII.A. 2:Sub-Watershed (HUC 12) Boundaries

The County revised existing HUC 12 watersheds that were created from old topographic data and which do not match current hydrology. The revised HUC 12 subwatersheds are hydrologically correct and match the existing HUC 12 boundaries as much as possible. The revised HUC 12s were clipped by the boundary for ESGV Group area.

MRP Part VII.A. 3: Land Use Overlay

Southern California Association of Governments (SCAG) land use data were clipped by the boundary for the ESGV Group area. The land use contains 105 land use categories, mapped down to a minimum two acre resolution for the years 1990, 1993, 2001 and 2005.

MRP Part VII.A. 4: Effective Impervious Area (EIA) Overlay (if available)

This information is not readily available in a usable form.

MRP Part VII.A. 5: Jurisdictional Boundaries

The County City_DataBase shapefile, which contains the legal city boundaries within Los Angeles County, was clipped by the boundary for the ESGV Group area.

MRP Part VII.A. 6: The location and Length of all Open Channel and Underground Pipes 18 inches in Diameter or Greater (With the Exception of Catch Basin Connector Pipes)

Nobel Systems created a county-wide comprehensive storm drain infrastructure GIS dataset for the Los Angeles County Storm Drain Initiative. Three layers from the dataset, ChannelSD (channels), StormMainSD (gravity mains), and ForceMainSD (force mains), were merged into one layer. This layer was then clipped by the boundary for the ESGV Group area. The layer contains all channels and pipes regardless of size. This layer can be revised as needed during the CIMP implementation process.

MRP Part VII.A. 7: The Location of All Dry Weather Diversions

The PumpStation shapefile from the County, which contains dry weather diversion locations, was clipped by the boundary for the ESGV Group area. There are no dry weather diversions located within the ESGV Group area.

MRP Part VII.A. 8: The Location of All Major MS4 Outfalls within the Permittee's Jurisdictional Boundary

A shapefile of outfalls was created by intersecting the three layers listed above from the Nobel Systems dataset with water bodies within Los Angeles County. The county-wide shapefile was then clipped by the boundary for the ESGV Group area. The layer contains all outfalls regardless of size. This layer can be revised as needed during the CIMP implementation process.

MRP Part VII.A. 9: Notation of Outfalls with Significant Non-Storm Water Discharges (To be Updated Annually)

The determination of significant will be made after the initial screening process outlined in the CIMP is completed using the criteria presented in the CIMP.

MRP Part VII.A. 10: Storm Drain Outfall Catchment Areas for Each Major Outfall within the Permittee(s) Jurisdiction

The MS4 Outfalls layer described above contains a column that lists the Los Angeles County's Watershed Management Modeling System (WMMS) subwatershed that each outfall is located in. The WMMS subwatersheds can be used to deliniate the catchment areas for each major outfall. Detailed analysis of storm drain outfall catchment areas for outfall monitoring locations, outfalls identified as having significant non-storm water discharges, and outfalls addressed by structural best management practices (BMPs) will be conducted as needed.

MRP Part VII.A. 11a-f: Each Mapped MS4 Outfall Shall be Linked to a Database Containing Descriptive and Monitoring Data Associated with the Outfall

The MS4 Outfalls layer described above contains the required ownership, coordinates, and physical description information. The required photographs, determinination of whether the outfall conveys significant non-storm water discharges, and storm water and non-storm water monitoring data information will be added as needed during the MS4 outfall screening process.

Table 1. Compiled Data File Names for Information Required by MRP Section VII.A

MRP Section VII.A Requirement	ESGV Group Data Files
1.	ESGV_Streams, ESGV_Lakes
2.	ESGV_HUC12
3.	ESGV_SCAG05
4.	Not Available
5.	ESGV_Cities
6.	ESGV_NOBEL_SDS
7.	None in CIMP area
8.	ESGV_Outfalls_WMMS
9.	ESGV_Outfalls_WMMS[1]
10.	ESGV_Outfalls_WMMS
11.	--
a.	ESGV_Outfalls_WMMS
b.	ESGV_Outfalls_WMMS
c.	ESGV_Outfalls_WMMS
d.	ESGV_Outfalls_WMMS[1]
e.	ESGV_Outfalls_WMMS[1]
f.	ESGV_Outfalls_WMMS[1]

1. Required to be updated with notation of outfalls with significant non-storm water discharge (#9) as well as photographs, determinination of whether the outfall conveys significant non-storm water discharges, and storm water and non-storm water monitoring data (#11d, e, and f, respectively) during the MS4 outfall screening process.

JUNE 2014

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Draft Watershed Management Program (WMP) Plan

Prepared by

East San Gabriel Valley Watershed Management Group
(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

Executive Summary

The Cities of Claremont, La Verne, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a Notice of Intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) for Los Angeles County (County), as adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective on December 28, 2012. This WMP is a requirement of the Permit and presents an approach for compliance with the Permit.

The level of effort and funding needed to implement the best management practices (BMPs) identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these required budget increases will not be possible.

IDENTIFICATION OF WATER QUALITY PRIORITIES

The water quality prioritization determines which pollutants are of concern for the waterbodies in the WMP area and the water body-pollutant combinations (WBPCs) which will be addressed within the Group's area. The Permit defines three categories of WBPCs to be used:

- **Category 1** are those subject to an established Total Maximum Daily Load (TMDL);
- **Category 2** are those on the 303(d) list or those that have sufficient exceedances to be listed; and
- **Category 3** for those with observed exceedances but too infrequent to be listed.

Subcategories of the WBPCs were identified to refine the prioritization process based on the frequency, timing, and magnitude of exceedances.

WATERSHED CONTROL MEASURES

The focus of the WMP is on the identification of sufficient amount and types of BMPs to meet receiving water and effluent limitations set forth in the Permit. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP selection is to reduce the impact of stormwater and non-stormwater on receiving water quality.

To support WMP development, a nomenclature for BMPs was established based on two main categories of structural BMPs: regional BMPs and distributed BMPs. Multiple regional and distributed BMPs were identified by the Group for consideration in the WMP. The Group will continue to implement minimum control measures (MCMs) as required by the Permit.

REASONABLE ASSURANCE ANALYSIS

The Reasonable Assurance Analysis (RAA) was conducted with the Watershed Management Modeling System (WMMS). The RAA is a key element of the WMP, used to provide confidence in the effectiveness of BMPs, and support BMP scheduling.

WMP compliance will be determined on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with receiving water limitations (RWLs) and water quality based effluent limitations (WQBELs) of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals. However, the cities are provided flexibility to modify the suite of BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the Coordinated Integrated Monitoring Program (CIMP), indicate that less extensive BMP implementation is needed to achieve Permit limitations.

To establish an initial scenario for BMP implementation to retain the 85^{th} percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the right-of-way (ROW), public parcels, and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) for new development and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs may be retained with regional BMPs.

Based on RAA modeling, the BMP capacity necessary to retain the 85^{th} percentile design storm volume for the WMP area is approximately 544 acre-feet. During WMP implementation, ROW BMPs other than green streets may be selected, such as dry wells. As part of the adaptive management process, the capacity of non-ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

SCHEDULING OF CONTROL MEASURES

The San Gabriel River Metals TMDL is used as the primary schedule for BMP implementation for the ESGV Group. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. For the 10% milestone, a suite of control measures are identified that will be implemented by 2017 including non-structural BMPs, a Rooftop Runoff Reduction Program, and recently constructed and planned structural BMPs. Each of the control measures identified for the 10% milestone are enhanced compared to implementation levels that existed prior to the new Permit. Attainment of the design storm volumes to address the final limits of the San Gabriel River Metals TMDL will also address all other TMDLs in the WMP area.

ADAPTIVE MANAGEMENT PROCESS

The WMP is intended to be implemented as an adaptive program as new program elements are implemented and information is gathered over time. The WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to addressing changing conditions and maintaining effectiveness going forward. This process is repeated every two years following the final approval of the WMP.

IMPLEMENTATION PROCESS

With sufficient time, the BMP networks identified in the WMP could be implemented and the neighborhoods of the ESGV Group could be enhanced with green infrastructure to effectively manage stormwater. Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of BMP implementation. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP. The ultimate goal is appropriate protection of beneficial uses.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

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LIST OF ACRONYMS AND ABBREVATIONS

BMP	Best Management Practice
CALTRANS	California Department of Transportation
CEDEN	California Environmental Data Exchange Network
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
County	County of Los Angeles
CWH	Council for Watershed Health
ESCP	Erosion and Sediment Control Plan
ESGV	East San Gabriel Valley
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
Group	East San Gabriel Valley Watershed Management Group
IC/ID	Illicit Connection/Illicit Discharge
L-SWPPP	Local Stormwater Pollution Prevention Plan
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LID	Low Impact Development
LSPC	Loading Simulation Program in C++
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NIMS	Nonlinearity-Interval Mapping Scheme
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyl
Permit	Order No. R4-2012-0175, NPDES Permit No. CAS004001
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
ROW	Right-of-Way
RWL	Receiving Water Limitation
SUSMP	Standard Urban Stormwater Mitigation Program
SUSTAIN	System for Urban Stormwater Treatment and Analysis Integration
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCM	Watershed Control Measure
WMMS	Watershed Management Modeling System
WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQO	Water Quality Objectives

1 Introduction

1.1 BACKGROUND AND REGULATORY FRAMEWORK

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Order No. R4-2012-0175 (Permit) was adopted November 8, 2012 by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in Los Angeles County (County) are not causing or contributing to exceedances of water quality objectives (WQOs) set to protect the beneficial uses in the receiving waters in the Los Angeles region.

The Cities of La Verne, Claremont, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a notice of intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the Permit. This WMP complies with Part VI.C.5-C.8 of the Permit as listed below:

(i) Prioritizes water quality issues resulting from storm water and non-storm water discharges from the MS4 to receiving waters within the Group's area;
(ii) Identifies and implements strategies, control measures, and best management practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d of the Permit;
(iii) Modifies strategies, control measures, and BMPs as necessary based on analysis of monitoring data to ensure that applicable water quality-based effluent limitations (WQBELs) and receiving water limitations (RWLs) and other milestones set forth in this WMP are achieved in the required timeframes;
(iv) Provides appropriate opportunity for meaningful stakeholder input.

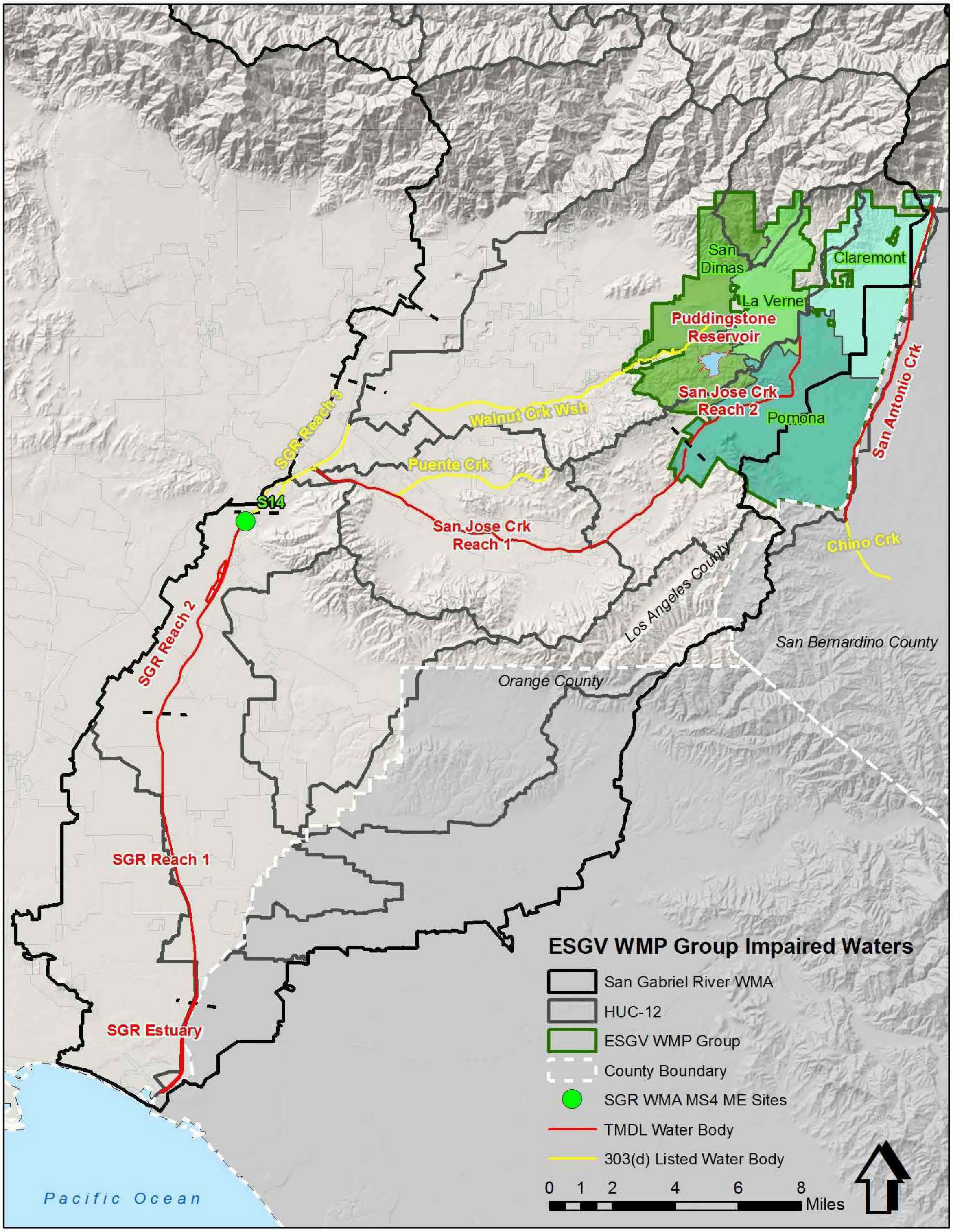
1.2 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP

The San Gabriel River Watershed encompasses 682 square miles of eastern Los Angeles County, northwest Orange County, and southwest San Bernardino County. The San Gabriel River has a main channel length of approximately 58 miles, and the main tributaries of the San Gabriel River are Walnut Creek, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek in the Santa Ana River Watershed. The Group's area is located in the Northeastern part of the San Gabriel River Watershed. **Figure 1-1** depicts the geographical scope covered by the ESGV Group. **Table 1-1** shows the land area distribution by each jurisdiction for the ESGV Group, not including the Angeles National Forest.

Table 1-1
East San Gabriel Valley Watershed Management Group Area by Permittee

Jurisdiction	Land Area (Acres)	Percent
City of Claremont	8,619	22.3%
City of La Verne	5,454	14.1%
City of Pomona	14,701	38.0%
City of San Dimas	9,865	25.5%
TOTAL	**38,639**	**100%**

Figure 1-1
Map of Los Angeles County Showing the Locations of the San Gabriel River Watershed and the ESGV Group Area



1.3 STAKEHOLDER PARTICIPATION

The ESGV Group is committed to providing the opportunity for meaningful stakeholder input throughout the development of the WMP. The ESGV Group has participated in working groups that were developed to facilitate collaboration among stakeholders and the technical team, including the Technical Advisory Committee. Informational flyers have been developed for distribution in City Halls, during community events, and posted online to solicit community input. Additional presentations have been provided at City Council meetings and on city websites that are televised to distribute information regarding Permit compliance to stakeholders.

2 Watershed Characterization

2.1 GEOGRAPHICAL DESCRIPTION

The San Gabriel River encompasses 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks of the river. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek and Chino Creek in the Santa Ana River Watershed. The WMP area is located in the upper portion of the San Gabriel River Valley. **Figure 1-1** shows the jurisdictional boundaries and nearby water bodies.

2.1.1 Geology

The geology underlying the area of the San Gabriel River Watershed in the ESGV Group can be subdivided into three general types of geologic materials:

- Bedrock materials in the steep upper portion of the watershed in the Angeles National Forest in the San Gabriel Mountains
- Sedimentary materials comprising valley fill emanating from alluvial fans from the San Gabriel Mountains
- Marine sedimentary deposits which comprise the San Jose and Puente Hills

The bedrock materials of the San Gabriel Mountains consist of igneous and metamorphic rocks which have been uplifted by faulting to form steep ridges and valleys in the upper portion of the watershed. These rocks are generally impermeable and transmit only small quantities of water through fractures.

The sedimentary materials which comprise the flatter areas of the valley are comprised of alluvial fan and fluvial deposits. These deposits tend to be very permeable, especially near the northern portions of the valley adjacent to the San Gabriel Mountains. The valley fill materials consist of interbedded silt, sand and gravels. The numerous gravel pits in the valley are located in these deposits. The deposits represent the most promising areas for regional infiltration facilities. During dry weather, surface water from the San Gabriel Mountains infiltrates rapidly into these deposits, providing a hydraulic separation between the lower portions of the watershed.

The sedimentary deposits which form the upland areas of the San Jose Hills adjacent to Puddingstone Reservoir consist of marine sandstone, siltstone, and shale. Because these deposits are fine-grained and consolidated, they have relatively low permeability. Aside from the disadvantages of higher elevation and relatively steep slopes, they represent poor areas for infiltration because of their expected low permeability.

2.1.2 Groundwater Basins

The alluvial and fluvial valley-fill deposits in the flatter areas of the watershed from several groundwater basins which underlie the WMP area. The western portion of San Dimas underlies

the Main San Gabriel Groundwater Basin. This groundwater basin is an important source of water supply, with a typical production of 250,000 acre-feet of water per year. The basin is adjudicated and actively managed by the Main San Gabriel Watermaster. Groundwater flow is generally from east to west across the basin, then southward into the Central Basin through the Montebello Forebay. There are numerous existing facilities for capture of stormwater in the Main San Gabriel Basin operated by the Los Angeles County Department of Public Works and Los Angeles County Flood Control District (LACDPW and LACFCD). The groundwater basin contains a number of contaminant plumes stemming from past agricultural an industrial practices, including nitrate, volatile organic compounds, and perchlorate. These plumes could be significant in terms of planning regional BMPs if the volume a water infiltrated has the potential to adversely affect on-going remediation efforts.

The western portion of Pomona overlies the Chino Groundwater Basin, one of the larger groundwater basins in Southern California. Historical production in the Chino Basin averages approximately 150,000 acre-feet per year. In between these two relatively large groundwater basins are the Six Basins comprised of the Canyon, Upper and Lower Claremont Heights, Pomona, Live Oak, and Ganesha Basins. These basins underlie portions of La Verne, Claremont, and Pomona. Groundwater production from these basins has typically averaged approximately 18,000 acre-feet per year. These smaller basins are separated by generally northeast-trending faults which in some cases act as barriers to groundwater flow. South of the Six Basins is the Spadra Basin underlying the southern portion of Pomona. All of the nine groundwater basins underlying the area are adjudicated and actively managed by a watermaster except the Spadra Basin. The smaller basins also contain contaminant plumes stemming from past agricultural and industrial practices including nitrates, volatile organic compounds, and perchlorate.

A potentially important aspect of the groundwater basins that may have an impact on infiltration of large volumes of water are the presence of rising groundwater (cienegas) present in various locations in the Pomona Basin which are a concern for management of the basin. Basin water levels must be closely managed to avoid rising water and property damage. The Canyon Basin, cienegas of San Dimas, and Upper Claremont Heights Basin each experienced rising groundwater in the past. These areas of high groundwater should be avoided for large-scale infiltration facilities.

2.2 RAINFALL CONDITIONS

The semi-arid climate of the Los Angeles region creates distinct hydrology differences between the dry and wet seasons. The amount of rainfall is a key variable for water quality conditions and pollutant loadings from MS4 areas. To support WMP development, a rainfall analysis was performed by aggregating data from available rain gages across the San Gabriel River watershed. For comparison, other watersheds were also analyzed. The following key metrics were evaluated for comparison for the Group. These consist of: (1) total annual rainfall, and (2) average rainfall per wet day[1]. Average rainfall per wet day serves as a coarse indicator of rainfall intensity. The

[1] Wet days defined as days having greater than 0.1 inches of rainfall.

analysis covered 25 water years from 1987 through 2011—the total rainfall for each precipitation gage was aggregated into annual totals based on water year (i.e. October through September).

For WMP development, the last 10 years of available data is used to develop the Reasonable Assurance Analysis (RAA) (Section 5). As shown in **Table 2-1**, the most recent 10 years were compared to the overall 25 years of record. Both the average and 90th percentile values were compared across the 10- and 25-year records. For the San Gabriel River Watershed, water year 2008 was a representative average year based on both rainfall metrics (19.4 inches per year and 0.76 inches per wet day compared to the average 20.7 and 0.72, respectively). Water year 2003 was approximately the 90th percentile rainfall per wet day and not greatly below the 90th percentile total rainfall (23 inches per year and 0.92 inches per wet day compared to the 90th percentile 37.8 and 0.92, respectively). As such, water year 2008 is a representative year for average conditions and water year 2003 is a representative year for critical wet conditions, which are important boundary conditions for the RAA (Section 5).

Table 2-1
Annual Rainfall in the San Gabriel River Watershed (Water Years 2002–2011 vs. 25-year Average)

Water Year	Average Rainfall Totals (inches/year)	Average Rainfall Per Wet Day (inches/wet day)
2002	30.6	0.42
2003	23	0.92
2004	13.7	0.66
2005	49.6	1.07
2006	17.9	0.64
2007	6.4	0.41
2008	19.4	0.76
2009	14.6	0.65
2010	24.1	0.82
2011	28.5	0.76
Average (1987-2011)	20.7	0.72
90th Percentile (1987-2011)	37.8	0.97

Yellow highlighted cells are the two years in each basin with the smallest difference from the 25-year average. Green cells have the smallest difference from 90th percentile of the 25-year record.

3 Identification of Water Quality Priorities

Water quality priorities establish which constituents are addressed by the WMP, and support prioritization and scheduling of WMP control measures. The Permit outlines a specific set of priorities based on Total Maximum Daily Loads (TMDLs), State Water Resources Control Board 2010 Clean Water Act Section 303(d) list, and evaluation of monitoring data. Data was obtained from numerous sources and analyzed to evaluate exceedances of WQOs. Based on the analysis, water-body pollutant combinations (WBPCs) were identified and then were classified in one of the three categories as defined in the Permit. Category 1 applies if the WBPC is subject to an established TMDL; Category 2 applies if the WBPC is on the 3030(d) list, or has sufficient exceedances to be listed; and, Category 3 if observed exceedances, but not at a frequency to be listed.

3.1 WATER BODY-POLLUTANT RECEIVING WATER LIMITATION EXCEEDANCES

Monitoring data for sites within the San Gabriel River Watershed Management Area was obtained from the following sources:

- LACDPW long-term monitoring data from the San Gabriel River Mass Emission Stations S14 and S13.
- The Council for Watershed Health (CWH) monitoring data from monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN).
- The Los Angeles County Sanitation District long-term receiving water monitoring data.

Data received from the CWH and CEDEN largely consisted of short-term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential WQO exceedances. A large number of monitoring sites were located in receiving waters downstream from the WMP area. To identify the potential water quality priorities in the WMP area, data reflective of receiving waters downstream from the WMP area were considered. It is not known at this time if the MS4 discharges from the WMP area are contributing to water quality issues observed in the downstream receiving water. Water quality priorities based on downstream conditions identified for consideration in the RAA is appropriate based on the available data. Through implementation of the Coordinated Integrated Monitoring Program (CIMP), the ESGV Group will establish receiving water monitoring sites at the WMP boundary and MS4 outfall monitoring sites within the WMP area. Evaluation of the data collected through the ESGV CIMP will provide a determination if the area is contributing to downstream exceedances of WQOs. The CIMP and WMP will be modified in two-year cycles to maintain the appropriate list of WQPs through adaptive management based on monitoring results.

During dry-weather, the water bodies in the WMP area may be hydraulically disconnected from the lower sections of the watershed due to the rapid infiltration over soft bottom channels.

Additionally, the CIMP contains a non-stormwater outfall program to address significant dry-weather flows from the MS4 system. Monitoring performed under the CIMP will provide information to support a determination of whether the discharges are affecting the water quality downstream of the WMP area.

The water quality data was compared to WQBELs or WQOs, to determine if the constituent exceeds the limitations. The analysis was performed with both the past ten years and the past five years of data. The two time periods were analyzed to determine if exceedances are current issues, or if they were historic problems rectified through implementation of the SUSMP. Constituents that had no observed exceedances in the past five years or those that would not meet the 303(d) listing criteria for impairment could be considered for removal from the WBPC list.

3.2 ESGV GROUP WATER QUALITY PRIORITIES

Subcategories of the three Permit defined categories were created to refine the prioritization process. Those pollutants with measurements exceeding WQOs were further evaluated and categorized based on the frequency and timing of exceedances. Category 1 constituents are divided in subclasses based on whether the TMDL is from USEPA, has effective final limitations, and if there are observed exceedances in last five years of data. Category 2 and 3 are each divided based on whether the constituent is a pollutant, and if there are observed exceedances in last five years of data. The subcategories are listed and described in detail in **Table 3-1**. As determined by the data analysis, the WBPCs are placed in the respective subcategories and listed in **Table 3-2**. Constituents may change subcategories based on future monitoring in the WMP area, source investigations occur, and BMP implementation.

Table 3-1
Details for Water Body-Pollutant Combination Subcategories

Category	Water Body-Pollutant Combinations (WBPCs)	Description
1	**Category 1A:** WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years.	WBPCs with TMDLs with past due or current Permit term interim and/or final limits. These pollutants are the highest priority for the current Permit term.
	Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years.	The Permit does not require the prioritization of TMDL interim and/or final deadlines outside of the Permit term or USEPA TMDLs, which do not have implementation schedules. To ensure WMPs consider long term planning requirements and utilize the available compliance mechanisms these WBPCs should be considered during BMP planning and scheduling, and during CIMP development.
	Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan.	
	Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years.	WBPCs where specific actions may end up not being identified because recent exceedances have not been observed and specific actions may not be necessary. The CIMP should address these WBPCs to support future re-prioritization.
	Category 1E: WBPCs with future Permit term TMDL deadlines but have not exceeded in past 5 years.	
2	**Category 2A:** 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.	WBPCs with confirmed impairment or exceedances of RWLs. WBPCs in a similar class[1] as those with TMDLs are identified. WBPCs currently on the 303(d) List are differentiated from those that are not to support utilization of WMP compliance mechanisms.
	Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment or exceedances is not resolved. Either routine monitoring or special studies identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.	WBPCs where specific actions for implementation may not be identified because recent exceedances have not been observed. Pollutants that are in a similar class[1] as those with TMDLs are identified. Routine monitoring identified in the CIMP should ensure these WBPCs are addressed to support re-prioritization in the future.
3	**Category 3A:** All other WBPCs with exceedances in the past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.
	Category 3B: All other WBPCs that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment is not resolved. Routine monitoring identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 3C: All other WBPCs but have not exceeded in past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 While one or more pollutants may be contributing to the impairment, it currently is not possible to identify the specific pollutant/stressor.

Table 3-2
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories

Class(1)	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Copper (Dry)							I	I	
	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Copper (Dry)							F	F	
	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 3-2
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

Continued

Table 3-2
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).
2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.
3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.
Note that unless explicitly stated as sediment, constituents are associated with the water column.
I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.
303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

4 Watershed Control Measures

This section describes structural and non-structural control measures existing or planned in the ESGV Group area.

4.1 STRUCTURAL BMP DATA COMPILATION

Development of the WMP requires identification of watershed control measures, also referred to as BMPs, that are expected to be sufficient to meet receiving water and effluent limitations set forth in the Permit. The overarching goal of BMPs in the WMP is to reduce the impact of stormwater and non-stormwater on receiving water quality. This subsection describes efforts to develop consistent nomenclature for structural BMPs, and efforts to compile data regarding existing and planned regional BMPs.

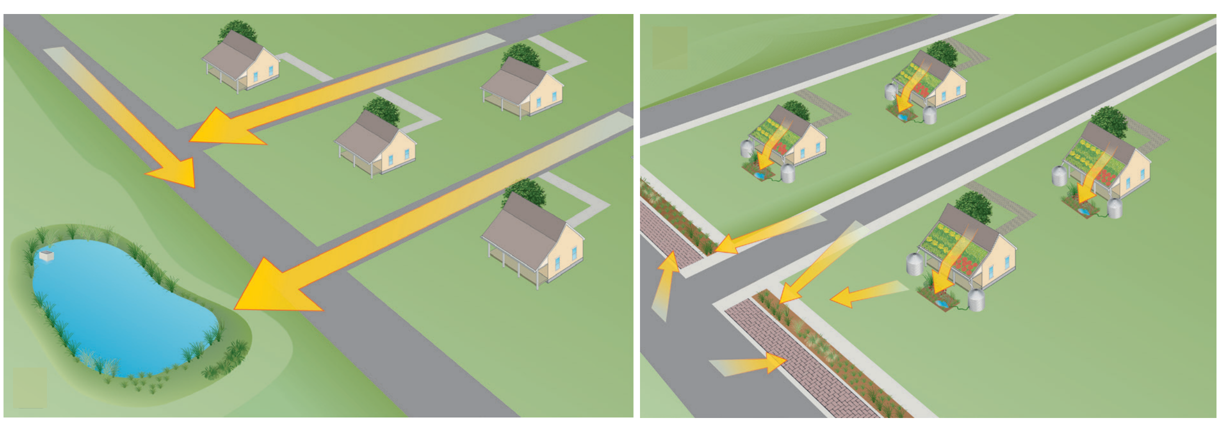
The two main categories of structural BMPs to be implemented by the WMP include regional and distributed (**Figure 4-1)**, as follows:

- **Regional BMPs:** Constructed structural practices intended to treat runoff from a contributing area of multiple parcels (normally on the order of 10s or 100s of acres or larger). Regional BMPs may be constructed within a single jurisdiction or across multiple jurisdictions.

- **Distributed BMPs:** Constructed structural practices intended to treat runoff relatively close to the source and typically implemented at a single- or few-parcel level (normally less than one acre).

Note that regional BMPs are not necessarily able to capture the 85th percentile, 24-hour storm. The subset of regional BMPs that capture the 85th percentile, 24-hour storm, are referred to as "Regional WMP Projects". Drainage areas that are captured with a Regional WMP Project are expected to be considered in compliance with interim and final TMDL limits.

Figure 4-1
Conceptual Schematic of Regional (left) and Distributed (right) BMP Implementation Approaches



4.1.1 Structural BMP Subcategories

Regional and distributed BMPs were separated into subcategories as shown in **Table 4-1**. This nomenclature is used herein to compile and describe information on existing, planned, and potential BMPs.

Table 4-1
Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water or divert to the sanitary sewer.
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips and vegetated swales)
		Rainfall harvest (cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

4.1.2 Existing BMPs in the WMP Area

Regional BMPs will be a critical component of the WMP. Individual Group Members provided summaries of existing and planned BMPs. In addition, a literature review was performed to identify further structural BMP projects that were not encompassed by the data provided. The literature review included Integrated Regional Watershed Management Plan documents, and the Notice of Intent (NOI). A summary of recently-constructed and planned BMPs, by jurisdiction, is presented in **Table 4-2**. Calculated Capacities are included, if available.

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Catch Basin #1&2 (piped to underground retention system constructed in Phase II)	Bonita Cyn Gateway-Shops Phase I	2.25 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Capacity calculated as 69.4 cubic feet per second (cfs)
San Dimas	Underground Retention System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Treatment area = 6.27 acres
San Dimas	Continuous Deflection Separator (CDS) System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Pretreatment of stormwater runoff
San Dimas	Catch Basins with (2) Hydrodynamic Separators (CDS2015-4)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway	0.14 cfs (0.7 cfs each x 2)
San Dimas	Thirteen (13) Kristar Fossil Filters (off site)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway	
San Dimas	Biofilter - Vegetated Swale	Grigolla, Raymond	0.63 Acres	627 W Allen	Tributary Area: 0.18 acres.
San Dimas	Bio-skirt, Manufactured Devices (e.g., proprietary underground devices, hydrodynamic devices, etc.)		N/A	627 W Allen	1.32 cfs
San Dimas	Infiltration (Percolation) Trench	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	3/4" 2 yr. storm event and up to 25 yr. storm conveyed through perforated pipe and allowed to infiltrate in 72hr period

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Catch Basin Filter inserts	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(6) Catch basin filter inserts, (FloGard Plus) - location of one of six catch basins
San Dimas	Roof drain boxes	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(7) Roof drain boxes with filter inserts, (FloGard Plus) - location of one of seven roof drain boxes
San Dimas	Double Modular EcoRainTank System	San Dimas High - Parking Lot	0.6 Acres	800 West Covina Blvd	Total volume = 27'W x 57.62'L x 2.89' H
San Dimas	Underground Detention Trench	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy	100% peaked mitigated flow: 0.93 Acres
San Dimas	Vegetated Swale	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy	
San Dimas	Infiltration Basin with continuous deflective separation pre treatment	Costco	22.6 Acres	520 N Lone Hill (southeast corner of Gladstone/Lone Hill)	Sized to store the 1st 0.75" runoff (0.193"/hr.). Treat sediments, nutrients, organic compounds, debris, hydrocarbons, and metals
San Dimas	Infiltration Chamber	Southern California Edison - Parking Lot	5.1 Acres	South of Cienega, 800 West Cienega Avenue	3/4" 24-hr storm runoff volume (0.27 ac/ft.)
San Dimas	Infiltration (Percolation) Trench	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.293 acres. Peak Mitigation Flow Rate: Qpm=0.08 cfs; Max Volume: 711 ft^3
San Dimas	Biofilter - Grass Swale	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.181 acres. Qpm=0.05 cfs
San Dimas	water quality inlet - FloGard	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Stormtech infiltration basin	City Ventures - Tract 72590	3.70 Acres	155 N. Eucla Street	Measuring at 110 feet x 10 feet
San Dimas	Infiltration Basin	Olsen	6.0 Acres	North of Foothill Blvd	Measuring 16' x 76' x 4'
San Dimas	Bioswale Retention Basin	Care Meridian: Via Verde Rehab Center	1.8 Acres	1136 & 1148 Puente Street	Measuring 126 feet x 68 feet
San Dimas	Perforated Pipe - Retention	Tract 71259:	1.03 Acres	301 S San Dimas Avenue	Measuring length= 147 L.F. and diameter = 48"
San Dimas	Basin 7 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,082 square feet (Anticipated to treat 20.12 acres)
San Dimas	Basin 8 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,600 square feet (Anticipated to treat 39.32 acres)
San Dimas	Modular Wetland Systems (MWS) 1-13	Brasada NJD Development	270 Acres	North of Foothill Blvd	3.37 CFS
San Dimas	Bioswale (biofilter)	Lone Hill / Las Colinas Tract 60865	7.06 Acres	Lone Hill Avenue south of Gladstone and north of Saint George	0.204 CFS
La Verne	Bioretention	Oak Grove Walk		End of Dover at Valentine & Canopy	
La Verne	Infiltration (Dry) Well	Oak Grove Walk		End of Dover at Valentine & Canopy	
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin	La Verne Tech Center (planned)		Wheeler Avenue and Puddingstone Drive	
La Verne	Vegetated Swale	University of La Verne Campus West (completed 3/2014)		Wheeler Avenue and Puddingstone Drive	Swale is 327' by 4' (1,308 square feet)

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	University of La Verne Campus West (completed 3/2014)		Wheeler Avenue and Puddingstone Drive	
La Verne	Infiltration (Dry) Well	Jack in the Box (completed 12/2013)		Damien Avenue and Foothill Boulevard	System capacity 1,067 cubic feet
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	Jack in the Box (completed 12/2013)		Damien Avenue and Foothill Boulevard	
La Verne	Infiltration (Dry) Well	University of La Verne Parking Lot S (completed 8/2013)		A Street and Walnut Avenue	Retain 3/4 inch of 25 year storm, system capacity 9,424 cubic feet.
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	University of La Verne Parking Lot S (completed 8/2013)		A Street and Walnut Avenue	
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin That Empties to Stromdrain	Village La Verne		Foothill Boulevard and Bradford	
La Verne	Infiltration (Dry) Well	1300 Palomares Industrial (planned)		1300 Palomares Ave. (Palomares Ave East of Damien Ave)	
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	1300 Palomares Industrial (planned)		1300 Palomares Ave. (Palomares Ave East of Damien Ave)	
Pomona	Cultech Retention System, Cultech Filter	San Jose Elementary Parking Lot	0.38 Acres	2015 Cadillac Dr.	1146 cubic feet
Pomona	Infiltration Trench	The Southern California Dream Center	1.23 Acres	1024 Phillips Blvd.	501 cubic feet
Pomona	Infiltration Basins, Drain Inserts	Fremont Middle School Modernization	1.84 Acres	725 W. Franklin Ave.	2601 cubic feet
Pomona	Pervious Pavement, Vegetated Buffer Strip, Drain Inserts	Chase E Bank	0.09 Acres	110 E. Foothill Blvd.	1064 cubic feet

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
Pomona	Infiltration Basins, Vortex Separator	Rio Rancho Town Center	21.1 Acres	Rio Rancho Road	118,085 cubic feet
Pomona	Infiltration Trench	Charisma Life Church	0.35 Acres	305 E. Arrow Highway	2400 cubic feet
Pomona	Infiltration Trench, Vortex Separator, Drain Inserts	Mission 71 Business - Building O	11.1 Acres	Tract Map No. 61428	
Pomona	Vegetated Swale, Filtera Units	Pomona Valley Hospital Medical Center	9.1 Acres	1798 N. Garey Ave.	
Pomona	Infiltration Basin, Drain Inserts	Metrolink	3.25 Acres	2704 N. Garey Ave.	
Pomona	Bio-retention planters (3)	Home Depot Outparcel (Meridian Pomona)	0.61 Acres	2703 S Towne Ave	1779 cubic feet
Pomona	CDS Unit	Monterey Station	6.71 Acres	100 E Monterey Ave.	15834 cubic feet
Pomona	Bio-retention facilities (2), vegetated swales	Pomona Ranch Plaza, Lot 7	10.78 Acres	75 Rancho Camino Dr	
Pomona	Infiltration Basins, Drain Inserts, Vortex separator	Mission 71 Business - Building LMN	10.12 Acres	1585 W. Mission Blvd.	23376 cubic feet
Pomona	vegetated swales, infiltration trenches, clarifier, grate inlet/media filtration devices	Pomona Valley Transfer Station	10.2 Acres	1371 E Ninth Street	3817 cubic feet
Pomona	Vortex separator, infiltration trenches	Mission 71 Bldgs P, Q, R, S	23.4 Acres	1875 Mission Blvd	36106 cubic feet
Pomona	swales, infiltration	Jefferson Park (Phil & Nell Soto Park) (Planned)	2 Acres	Orange Grove Ave at Park Ave and Jefferson Ave	
Claremont	Drywell/Filter	Citrus Glen @ Pitzer Ranch	3.31 acres	926 W. Baseline Road	
Claremont	Detention Basin/Vegetated Swale/Maxwell IV Drywell	Pomona College - 4th Street Walk	1.5 acres	101 N. College Avenue	

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
Claremont	Underground Infiltration Basin	TR 72078	4.22 acres	Baseline Road & Mountain Avenue	
Claremont	Vegetated Swale	Claremont Toyota Service Building	0.2 acres	601 Auto Center Drive	
Claremont	Rain Gardens/Underground Infiltration Basins/Infiltration Trench	Millikan Laboratory & Andrew Science Hall		610 North College Avenue	
Claremont	Infiltration System (drywell)	Indian Hill Blvd and Vista	1.7 acres	Indian Hill Blvd. & Vista Dr.	3,920 cubic feet per acre
Claremont	Maxwell Deep well Drywell, Underground Detention pipes, Kristar Lo Pro Media	Gable Crossing	4.06 acres	506 and 618 w Baseline Rd.	10,017 cubic feet per acre
Claremont	2- gravel drywells, 20 vegetated swales, and 3,301 square feet pervious pavers	Neptune Apartments	0.71 acres	365 W San Jose Ave	1,307 cubic feet per acre, 436 cubic feet per acre
Claremont	3 Vegetated Swales	Roberts Pavilion	3.55 acres	690 N. Mills	8,956 cubic feet per acre
Claremont	Detention/Infiltration Tank, Trench Drain	Claremont Village Lofts	1.66 acres	127 Oberlin	4,815 cubic feet per acre
Claremont	Maxwell Drywell Infiltration System	E. Baseline and Towne	5.88 acres	E. Baseline and N. Towne Ave	13,705 cubic feet per acre
Claremont	Bio-Swale	Western Christian School	4.8 acres	3105 Padua Aveune	
Claremont	Vegetated Grass Strips, Vegetated Grass Swale, Proprietary Control Measures, Infiltration Basin	Harvey Mudd College	1.87 acres	301 Platt Blvd.	3,490 cubic feet per acre

4.2 MCMS/INSTITUTIONAL BMPS

The Permit requires the implementation of minimum control measures (MCMs) in Parts VI.D.4 through VI.D.10. Although the previous permit (Order No. 01-182) required implementation of MCMs, some of the enhancements introduced by the current Permit include:

- Additional outreach and education as part of the Public Information and Participation Program is required. For example, each Group member will be required to maintain a website with stormwater-related educational materials.
- Each jurisdiction is expected to record more information on industrial and commercial facilities within their jurisdiction as part of their Industrial/Commercial Facilities Program.
- The Permit provides more detailed information on BMP criteria for use in the Group's Planning and Land Development Program, formerly the Development Planning Program, and calls for annual reporting of implemented mitigation projects.
- An Erosion and Sediment Control Plan (ESCP), which includes elements of a Storm Water Pollution Prevention Plan (SWPPP), replaces the Local SWPPP as a required document for construction activities meeting certain criteria as a prerequisite to building/grading permit issuance.
- The Permit also requires an electronic tracking system for construction activities within their jurisdiction and mandates more aggressive inspection schedules.
- The Public Agency Activities Program remains largely unchanged with the exception of requiring an inventory of existing developments for BMP retrofitting opportunities.

A comparison between program requirements of the previous and current Permit is summarized in **Table 4-3**.

4.2.1 Customization of MCMs

The Permit allows for customizing MCMs if the effectiveness on an MCM activity can reasonably show that customization would result in equal or improved water quality effects. The City of San Dimas is proposing to consider a uniform inspection approach. Inspection of construction sites one (1) acre or greater would occur bi-weekly during the wet weather season and monthly during the dry weather season. This modification will maintain adequate inspection frequencies while eliminating wet weather uncertainties. During implementation of the WMP, additional modifications may be considered as part of the adaptive management process.

Table 4-3
Comparison of Storm Water Management Program MCMs

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Public Information and Participation Program	Public Education Program - Advisory committee meeting (once per year)	x	
	"No Dumping" message on storm drain inlets (by 2/2/2004)	x	
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
	Outreach and Education	x	
	Make reporting info available to public	x	x
	Public service announcements, advertising, and media relations	x (4.B.1.c.1)	x
	Public education materials - Proper handling	x (4.B.1.c.3)	x
	Public education materials - Activity specific	x	x
	Educational activities and countywide events	x	x
	Quarterly public outreach strategy meetings (by 5/1/2002)	x	
	Constituent-specific outreach information made available to public	x	x
	Business Assistance Program	x	
	Educate and inform corporate managers about stormwater regulations	x	
	Maintain storm water websites		x
	Provide education materials to schools (50 percent of all K-12 children every two years)	x	x
	Provide principle permittee with contact information for staff responsible for storm water public educational activities (by 4/1/2002)	x	x
	Principle permittee shall develop a strategy to measure the effectiveness of in-school education programs	x	
	Principle permittee shall develop a behavioral change assessment strategy (by 5/1/2002)	x	
	Educate and involve ethnic communities and businesses (by 2/3/2003)	x (4.B.1.c.2)	x
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
Industrial/Commercial Facilities Program Industrial/Commercial Facilities Program	Track critical sources – Restaurants	x	x
	Track critical sources - Automotive service facilities	x	x
	Track critical sources - RGOs	x	x
	Track critical sources - Nurseries and nursery centers		x
	Track critical sources - USEPA Phase I facilities	x	x
	Track critical sources - Other federally-mandated facilities [40 CFR 122.26(d)(2)(iv)(C)]	x	x
	Track critical sources - Other commercial/industrial facilities that Permittee determines may contribute substantial constituent load to MS4		x
	Facility information - Name of facility	x	x
	Facility information - Contact information of owner/operator	name only	x
	Facility information - Address	x	x
	Facility information - NAICS code		x
	Facility information - SIC code	x	x
	Facility information - Narrative description of the activities performed and/or principal products produced	x	x
	Facility information - Status of exposure of materials to storm water		x
	Facility information - Name of receiving water		x
	Facility information - ID whether tributary to 303(d) listed water and generates constituents for which water is impaired		x
	Facility information - NPDES/general industrial permit status	x	x
	Facility information - No Exposure Certification status		x
	Update inventory of critical sources annually	x	x
	Business Assistance Program	optional	x
	Notify inventoried industrial/commercial sites on BMP requirement		once in 5 years
	Inspect critical commercial sources (restaurants, automotive service facilities, retail gasoline outlets and automotive dealerships)	twice in 5 years	twice in 5 years
	Inspect critical industrial sources (phase 1 facilities and federally-mandated facilities)	twice in 5 years[1]	twice in 5 years[2]
	Verify No Exposure Certifications of applicable facilities		x
	Verify Waste Discharge Identification number of applicable facilities	x	x
	Source Control BMPs	x	x
	Provisions for Significant Ecological Areas (Environmentally Sensitive Areas)	x[3]	x
	Progressive enforcement of compliance with stormwater requirements	x	x
	Interagency coordination	x	

Table 4-3
Comparison of Storm Water Management Program MCMs (continued)

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Planning and Land Development Program	Peak flow control (post-development stormwater runoff rates, velocities, and duration)	x	x[4]
	Hydromodification Control Plan	in lieu of countywide peak flow control	
	Standard Urban Stormwater Mitigation Program (SUSMP) (by 3/3/03)	x	
	Volumetric Treatment Control (SWQDv) BMPs	x	x
	Flow-based Treatment Control BMPs	x	x
	Require implementation of post-construction Planning Priority Projects as treatment controls to mitigate storm water pollution (by 3/10/2003)	x	x
	Require verification of maintenance provisions for BMPs	x	x
	California Environmental Quality Act process update to include consideration of potential stormwater quality impacts	x	
	General Plan Update to include stormwater quality and quantity management considerations and policies	x	
	Targeted Employee training of Development planning employees	x	
	Bioretention and biofiltration systems		x
	SUSMP guidance document	x	
	Annual reporting of mitigation project descriptions		x
Development Construction Program	Erosion control BMPs	x	x
	Sediment control BMPs	x	x
	Non-storm water containment on project site	x	x
	Waste containment on project site	x	x
	Require preparation of a Local SWPPP for approval of permitted sites	x	x
	Inspect construction sites on as-needed basis		x
	Inspect construction sites equal to or greater than one acre	once during wet season	once every two weeks[5], monthly
	Electronic tracking system (database and/or Geographic Information System (GIS))		x
	Required documents prior to issuance of building/grading permit	L-SWPPP	ESCP/SWPPP
	Implement technical BMP standards		x
	Progressive enforcement	x	x
	Permittee staff training	x	x
Public Agency Activities Program	Public construction activities management	x	x
	Public facility inventory		x
	Inventory of existing development for retrofitting opportunities		x
	Public facility and activity management	x	x
	Vehicle maintenance, material storage facilities, corporation yard management	x	x
	Landscape, park, and recreational facilities management	x	x
	Storm drain operation and maintenance	x	x
	Streets, roads, and parking facilities maintenance	x	x
	Parking Facilities Management	x	x
	Emergency procedures	x	x
	Alternative treatment control BMPs feasibility study	x	
	Municipal employee and contractor training		x
	Sewage system maintenance, overflow, and spill prevention	x	
IC/ID Elimination Program	Implementation program	x	x
	MS4 Tracking (mapping) of permitted connections and illicit connections and discharges	x	x
	Procedures for conducting source investigations for Illicit Connections/Illicit Discharges (IC/IDs)	x	x
	Procedures for eliminating IC/IDs	x	x
	Procedures for public reporting of ID		x
	IC/ID response plan	x	x
	IC/IDs education and training for staff	x	x

1 Tier 2 facilities may be inspected less frequently if they meet certain criteria
2 Subject to change based on approved WMP strategy
3 For environmentally sensitive areas and impaired waters
4 Maintain pre-project runoff flow rates via hydrologic control measures
5 Sites of threat to water quality or discharging to impaired water; frequency dependent on chance of rainfall

4.3 PROCESS FOR IDENTIFYING ADDITIONAL BMPS

As part of adaptive management, additional projects will be identified and considered for further evaluation during the WMP process. The extent of BMP implementation required to achieve WMP objectives will be determined through the CIMP monitoring and is intended to adapt to new data and information.

An evaluation of projects will begin with identification of specific parcels which are publically owned, such as parks, schools, flood control facilities, or other publicly-owned open spaces which may meet the area requirements identified in the evaluation of capture potential. A preliminary list of parks and schools has been identified, including their proximity to major storm drain infrastructure, as shown in **Figure 4-3**. If the number of publicly owned parcels is not sufficient to meet anticipated capture potential, privately owned parcels with large open spaces such as parking lots will be considered.

Based on this analysis of specific project locations, a list of projects will be generated to meet the objectives of the WMP, including the potential to capture the 85th percentile, 24-hour storm event. Analysis of the projects will include the parcel location, parcel size, current ownership, and necessary infiltration capacity. The list of projects generated as a result of this process will then be evaluated based on criteria developed by the ESGV Group, as described in the following section.

The process to identify and evaluate additional projects is illustrated schematically in **Figure 4-2** and further described in the following subsections.

Figure 4-2
Process for Identification and Evaluation of Additional Projects

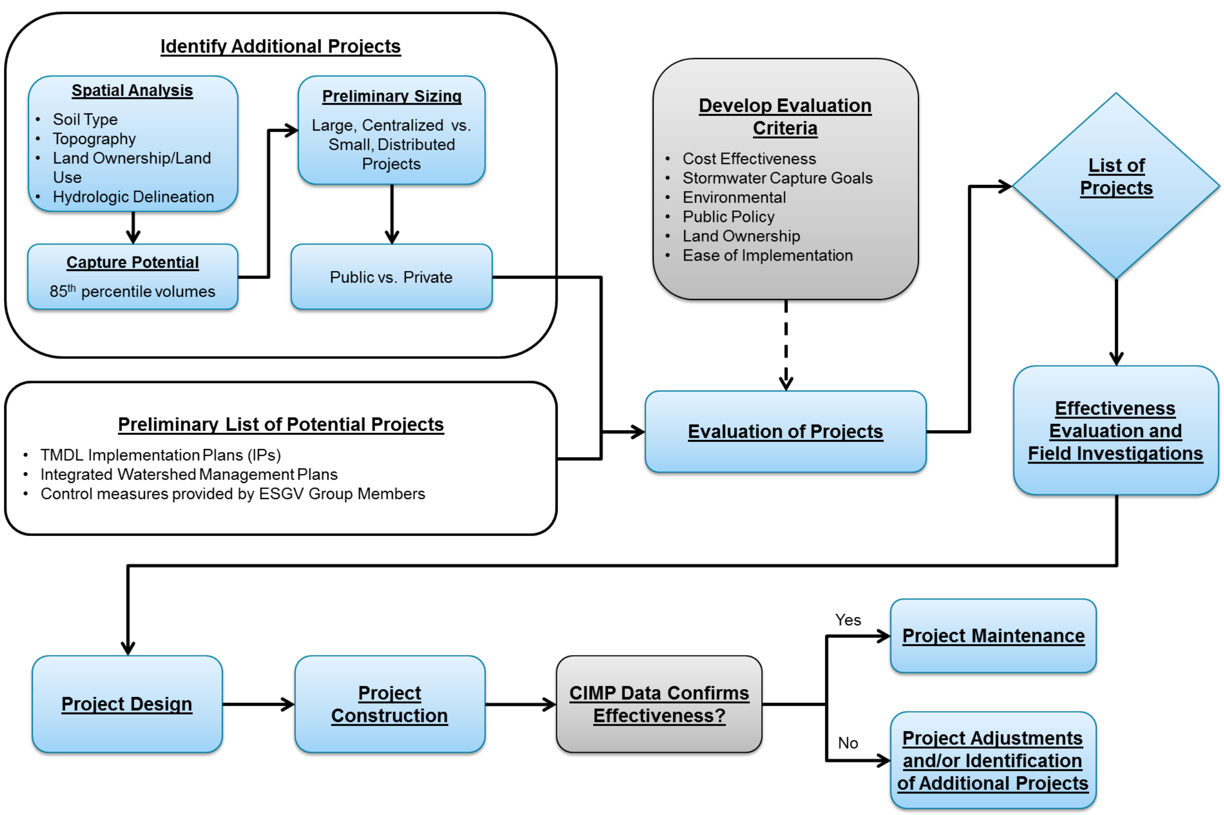
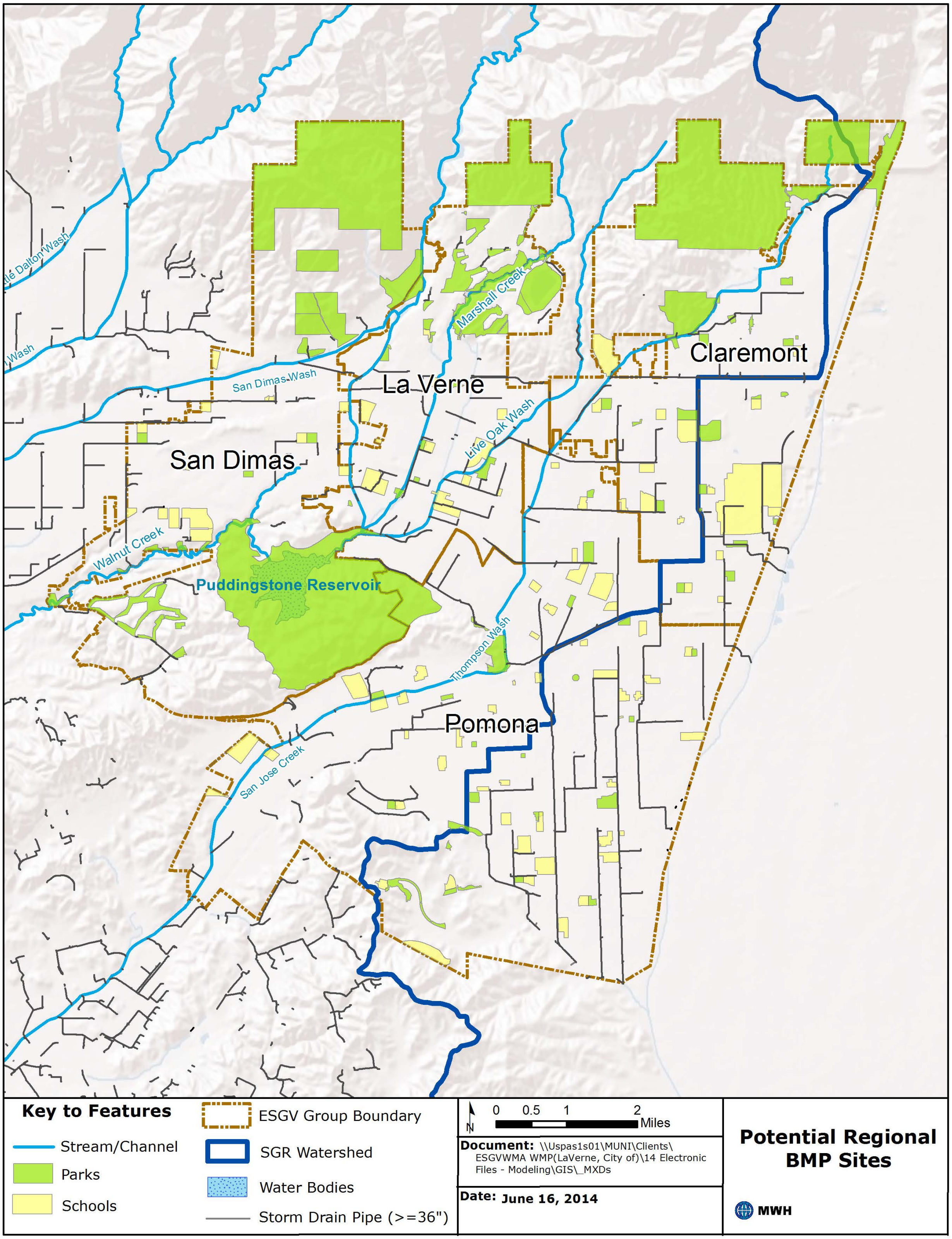


Figure 4-3
Potential Regional BMP Sites



4.3.1 Identification of Additional Projects

Additional BMPs will be identified using a detailed spatial analysis, beginning with an initial spatial analysis of fatal flaws, and culminating with an identification of potentially suitable locations.

4.3.1.1 Initial Spatial Analysis

Initially, a preliminary screening will identify locations within ESGV Group's jurisdictions that can be eliminated from consideration because they are clearly unsuitable for the siting of projects. Potential fatal flaws include adverse conditions related to:

- **Soil Type.** Surface soils such as bedrock materials, clay, or other relatively impermeable substrate will prohibit the infiltration of stormwater. Locations where these conditions exist will be considered less preferable during the initial screening.

- **Topography.** Locations with slopes greater than 25 percent will be eliminated from further consideration because of the difficulty in constructing facilities in terrain with high relief. Additionally, areas in the headwaters of the watershed will be considered less preferable because of the paucity of stormwater runoff in these areas.

- **Unsuitable Land Ownership and/or Land Use Designations.** Land ownership and/or prior designation of land use of areas within the ESGV Group's jurisdictional areas that would prohibit regional projects will be considered less preferable. Areas that are owned by the federal or state government will be considered less preferable because of the difficulty of permitting maintaining projects in these areas. Other considerations will include protected open spaces or wildernesses that are less suitable for regional projects.

- **Environmental Constraints.** Environmentally restricted areas, such as superfund sites and landfills will be deemed unsuitable during the initial screening. Areas of contaminated groundwater will need to be further evaluated to determine if recharge of stormwater causes mobilization of contaminants in the aquifer.

This initial spatial screening will result in identification of areas that may have the potential to meet the 85th percentile, 24-hour storm event capture volume requirement. These areas may be considered for further evaluation as potential Regional WMP Project locations.

4.3.1.2 Capture Potential and Preliminary Sizing

Projects are sited to capture the required volume of water at selected locations along stormwater flow paths within the jurisdictional areas. A few centralized locations at lower elevations in the watershed will require larger acreage and greater infiltration capacity than numerous distributed regional facilities located higher in the watershed. The intent of the capture potential analysis is to assess the practicality of a few centralized projects and evaluate the practical requirement for a larger number of distributed projects. Using typical infiltration rates, the size of a potential project can be evaluated if the volume of water to be captured is known. The next step in the progressive spatial analysis is to perform preliminary sizing of required facilities at key locations in the watershed. This will provide information as to the practicality of larger centralized projects and distributed projects.

4.3.2 Evaluation Criteria Development

The list of potential projects will be evaluated based on criteria developed by the ESGV Group, in order to determine the projects best suited for achieving the multi-benefit objectives of the WMP. **Table 4-4** identifies potential categories for evaluation criteria to prioritize projects and their ability to meet MS4

Permit requirements and the ESGV Group's goals. The following potential categories and considerations will be refined by the ESGV Group.

Table 4-4
Project Evaluation Criteria

Criteria Category	Considerations
Cost Effectiveness	Life Cycle Cost Capital Cost Operations and Maintenance Cost Funding Options (Grants, State Revolving Funds, other funding)
Stormwater Capture Goals	Capacity or Volume of Water Captured Water Quality Groundwater Recharge/Infiltration Capacity Geographical Location
Environmental	Environmental Constraints Reduced Energy Consumption Consumption of Other Resources Multi-use benefits Impact on habitat or species
Public Policy Institutional Issues	Political Constraints Education/Outreach Political Support Partnerships
Land Ownership	Public vs. Private Land Acquisition Impediments
Ease of Implementation	Permitting Schedules (short term vs. long term) Constructability Site Accessibility

4.3.3 Ranking Potential Projects

The list of potential projects will be ranked in accordance with the evaluation criteria described above and refined. Initially, ranking by category will be relatively simple, using qualitative weighting descriptions such as "favorable", "moderately favorable", and "not favorable". More quantitative criteria and weighting factors will be developed if necessary and if more quantitative data becomes available. Projects will be further evaluated through effectiveness evaluations and field investigations as necessary.

5 Reasonable Assurance Analysis and Watershed Control Measures

This section describes the RAA and presents the capacities of watershed control measures (WCMs) required to address the water quality priorities for the ESGV WMP. In this section, the terms WCMs and BMPs are used interchangeably. While the Permit prescribes the RAA as a quantitative demonstration that WCMs will be effective, the RAA for the ESGV WMP was also designed to identify and prioritize control measures to be implemented by the Group. In other words, the RAA for the ESGVWMP also supported the selection of WCMs. Furthermore, the RAA was used to schedule/sequence the implementation of BMPs to assure attainment of the interim WQBELs and RWLs.

For this WMP, the RAA process led to a decision by the Group to base the WMP around networks of BMPs that are able to collectively retain the volume associated with the 85th percentile storm, as depicted in **Figure 5-1** and described below.

5.1 REASONABLE ASSURANCE ANALYSIS

A key element of each WMP is the RAA, which is used to demonstrate "that the activities and control measures…will achieve applicable WQBELs and/or RWLs with compliance deadlines during the Permit term". The WMP has closely followed the RAA Guidelines issued by the Regional Board on March 25, 2014 (Los Angeles Regional Water Quality Control Board, 2014). The RAA is a predictive quantitative process that includes the following components:

Step 1: Incorporates Water Quality Priorities and identifies numeric goals to address them: Numeric Goals, which represent RAA drivers, include TMDL targets, WQBELs, RWLs and the 85th percentile design storm volume. The estimated baseline/existing loading or design storm volumes provides a reference point of comparison for measuring BMP performance and cost-effectiveness (i.e. the difference between the current loading or design storm volumes and predicted loading or volumes after BMPs are implemented, and the cost of those BMPs).

Step 2: Identifies opportunities for BMP implementation in the WMP area: the RAA inherently includes an exploratory element for evaluating BMP opportunities. The opportunities of most interest are right-of-way (ROW) and public parcels, as land acquisition can be prohibitively expensive.

Step 3: Evaluates effectiveness of potential BMPs on receiving water quality, jurisdictional loading and/or design storm runoff volume: this WMP will serve as a "recipe for compliance" for each jurisdiction. As such, assessment of the effectiveness of BMP scenarios requires consideration of averaging/simulation periods and determination of points where load or volume reductions will be assessed. In general, load reductions are assessed in-stream while design storm volume reductions are assessed at end-of-pipe.

Step 4: Identifies the combination of BMPs expected to attain Numeric Goals: the RAA is an iterative process that evaluates different combinations of BMPs and quantify their effectiveness. It is through the iterative modeling process that certain practices have been prioritized for inclusion in the WMP based on cost and feasibility.

Step 5: Supports scheduling to implement the BMPs over a timeline that addresses milestones cost-effectively: the pace at which BMPs are implemented is dictated by applicable TMDL and WMP milestones. Areas where BMP implementation offers the greatest immediate benefit for the lowest cost have been highlighted and recommended for the early implementation phases.

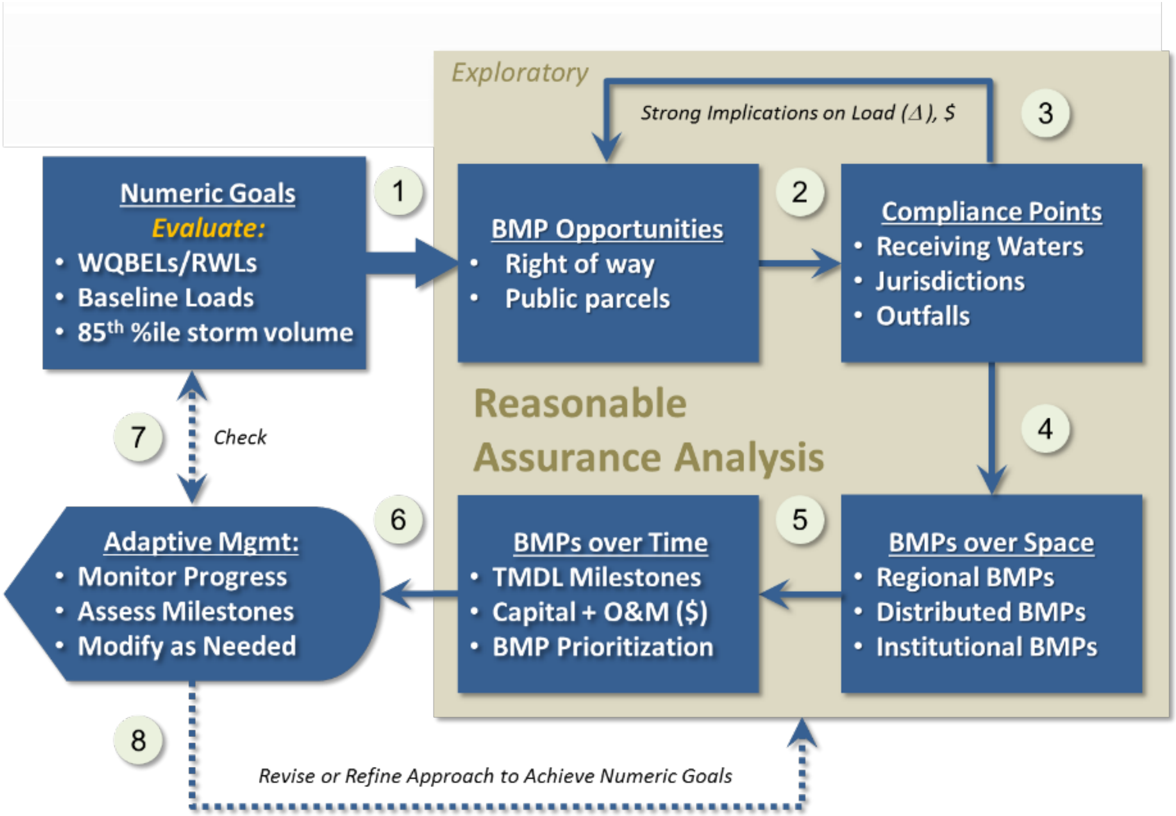
Step 6: Supports the future adaptive management process to incorporate new data and experience gained during BMP implementation: the BMP capacities identified in this WMP will be achieved over decades of implementation, and the adaptive management process will take place over two-year cycles to incorporate new data and regulatory modifications. Future data/outcomes that could affect the level of BMP implementation include new monitoring data collected through implementation of the CIMP, experience gained from BMP implementation, and changes to the water quality standards (i.e., beneficial uses or WQOs).

The RAA effort presented herein has evolved over the course of WMP development, and has been refined as new insights have come to light. The RAA will certainly be revisited and further refined with future adaptive management cycles as the WMP is implemented and performance validated.

Determination of compliance with this WMP will be on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented by each jurisdiction. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with RWLs and WQBELs of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals across the planning area, but the cities are provided flexibility to modify the BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the CIMP, indicate that less extensive BMP implementation is needed to achieve Permit limitations.

In order to establish an initial scenario for BMP implementation to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the Right-of-Way (ROW), and BMPs on public and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) due to new and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs (due to overflow) may be retained with regional BMPs. During WMP implementation, ROW BMPs other than green streets may be selected, including dry wells. As part of the adaptive management process, the capacity of non-ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

Figure 5-1
Conceptual Diagram of RAA Components



5.1.1 Description of RAA Modeling System

The WMMS was used to support this RAA. WMMS is specified in the Permit as a potential tool to conduct the RAA. LACFCD, through a joint effort with United States Environmental Protection Agency (USEPA), developed WMMS specifically to support informed decisions associated with managing stormwater. The ultimate goal of WMMS is to identify cost-effective water quality improvement projects through an integrated, watershed-based approach. The WMMS is a modeling system that incorporates three tools: (1) the watershed model for prediction of long-term hydrology and pollutant loading (Loading Simulation Program in C++ (LSPC)), (2) a BMP model (System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN)), and (3) a BMP optimization tool to support regional, cost-effective planning efforts (Nonlinearity-Interval Mapping Scheme (NIMS)). The WMMS encompasses the County's coastal watersheds of approximately 3,100 square miles, representing 2,566 subwatersheds (**Figure 5-2**).

For the ESGV Group, the 67 subwatersheds in the WMP area that are represented by WMMS were spatially refined by intersecting with jurisdictional/city boundaries of the Group, resulting in 98 unique subwatershed-city areas. Out of these 98 areas, 78 were hydrologically connected to at least one "RAA assessment point" used to evaluate the waterbodies of concern for this analysis.

Figure 5-3 shows the model spatial domain for the WMP with the jurisdictional and hydrological boundaries associated with the four RAA assessment points. The RAA assessment points are described in more detail below.

WMMS is available for public download from LACFCD. The version of WMMS used for the WMP has been enhanced/modified in several ways, consisting of:

- Updates to meteorological records to represent the last 10 years and to allow for simulation of the design storm;
- Calibration adjustments to incorporate the most recent 10 years of water quality data collected at the nearby San Gabriel River mass emission station;
- Enhancements to LSPC to allow for simulation of non-structural BMPs;
- Enhancements to SUSTAIN to allow for representation of an expanded/modified BMP network;
- Application of a second-tier of BMP optimization using SUSTAIN, which replaces the NIMS component of WMMS.
- Optimization of BMP effectiveness for removal of bacteria pollutants (rather than metals only); and
- Updates to GIS layers, as available.

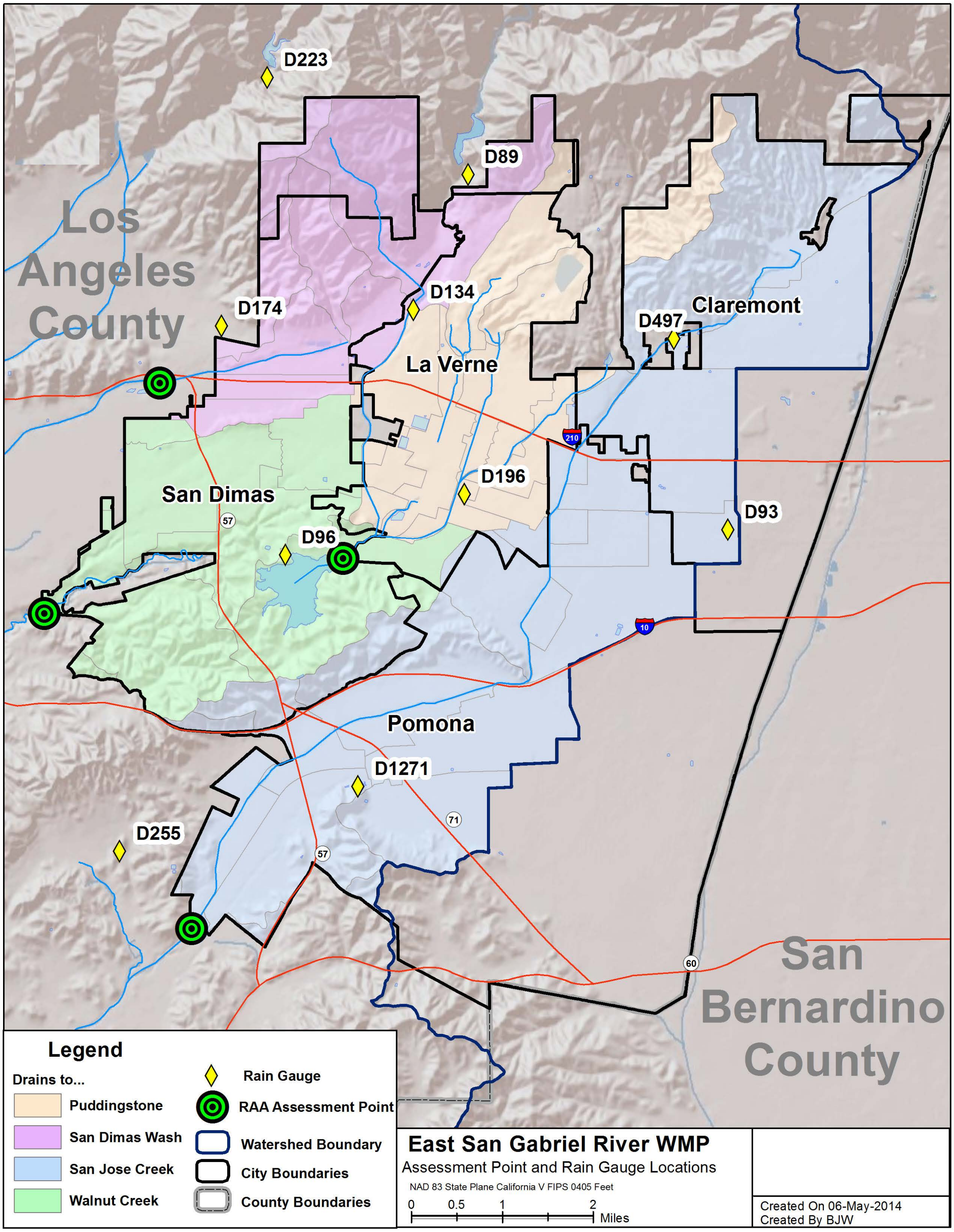
5.1.1.1 Overview of Watershed Model - LSPC

The watershed model included within WMMS is the LSPC (Tetra Tech and USEPA 2002; USEPA 2003; Shen et al. 2004). LSPC is a watershed modeling system for simulating watershed hydrology, erosion, and water quality processes, as well as in-stream transport processes. LSPC also integrates a geographic information system (GIS), comprehensive data storage and management capabilities, and a data analysis/post-processing system into a convenient PC-based Windows environment. The algorithms of LSPC are identical to a subset of those in the Hydrologic Simulation Program–FORTRAN model with selected additions, such as algorithms to dynamically address land use change over time. Another advantage of LSPC is that there is no inherent limit to the size and resolution of the model than can be developed, making it an attractive option for modeling the Los Angeles region watersheds. USEPA's Office of Research and Development first made LSPC available as a component of USEPA's National TMDL Toolbox (http://www.epa.gov/athens/wwqtsc/index.html). LSPC has been further enhanced with expanded capabilities since its original public release.

The WMMS development effort culminated in a comprehensive watershed model of the entire Los Angeles County area that includes the unique hydrology and hydraulics of the system and characterization of water quality loading, fate, and transport for all the key TMDL constituents (Tetra Tech 2010a, 2010b). Since the original development of the WMMS LSPC model, Los Angeles County personnel have independently updated the model with meteorological data through 2012, and refined the physical representation of the spreading grounds with higher resolution information.

Figure 5-2
WMMS Model Domain, Land Uses, and Slopes by Subwatershed

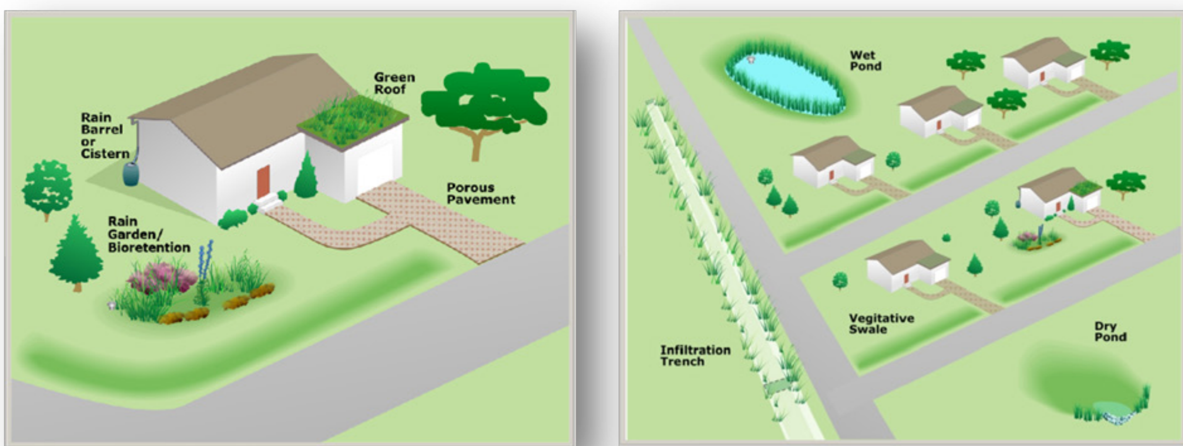
Figure 5-3
ESGV WMP Area Spatial Domain as Represented in WMMS



5.1.1.2 Overview of Small-Scale BMP Model – SUSTAIN

SUSTAIN was developed by USEPA to support practitioners in developing cost-effective management plans for municipal storm water programs and evaluating and selecting BMPs to achieve water resource goals (USEPA, 2009). It was specifically developed as a decision-support system for selection and placement of BMPs at strategic locations in urban watersheds. It includes a process-based continuous simulation BMP module for representing flow and pollutant transport routing through various types of structural BMPs. Users are given the option to select from various algorithms for certain processes (e.g., flow routing, infiltration, etc.) depending on available data, consistency with coupled modeling assumptions, and the level of detail required. **Figure 5-4** shows images from the SUSTAIN model user interface and documentation depicting some of the available BMP simulation options in a watershed context.

Figure 5-4
SUSTAIN Model Interface Illustrating Some Available BMPs in Watershed Settings



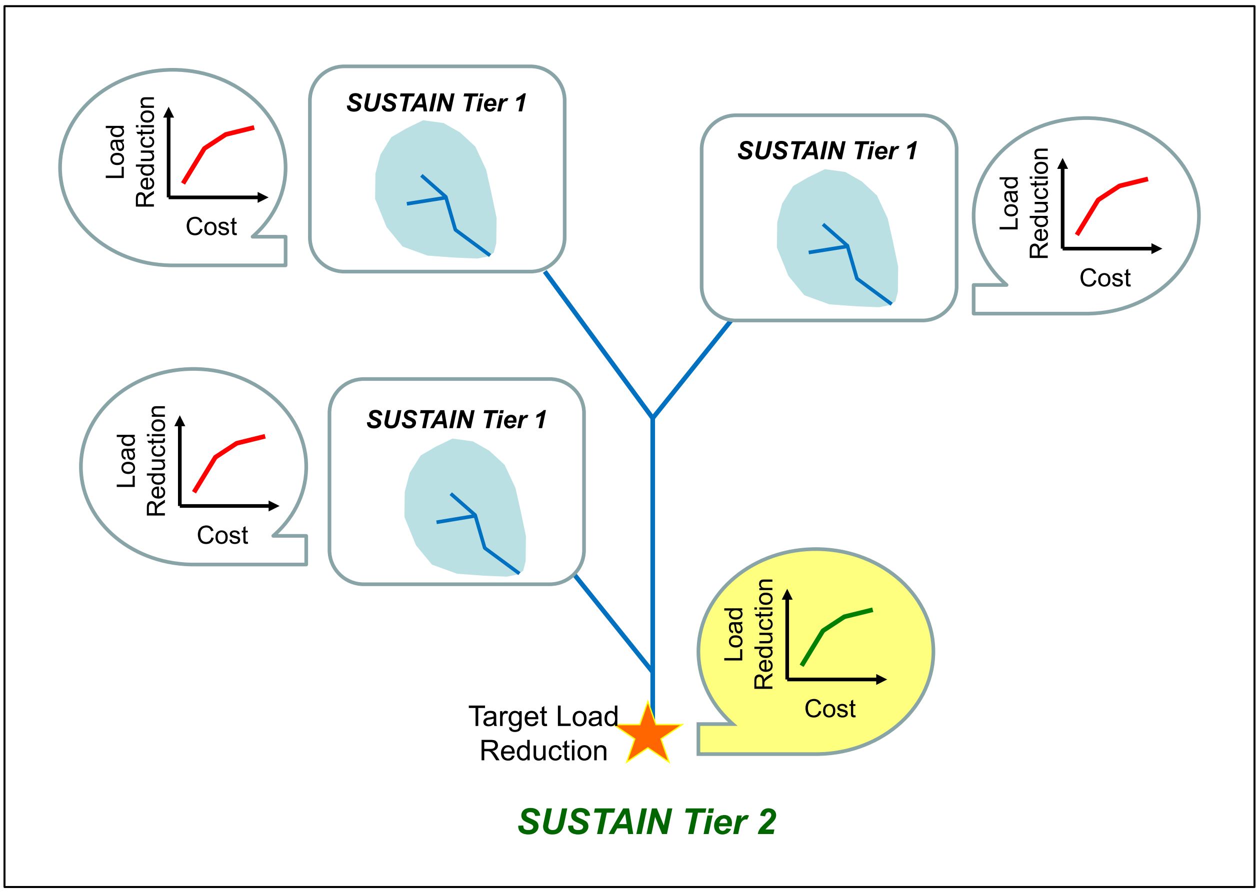
SUSTAIN extends the capabilities and functionality of traditionally available models by providing integrated analysis of water quantity, quality, and cost factors. The SUSTAIN model in WMMS includes a cost database comprised of typical BMP component cost data from a number of published sources including BMPs constructed and maintained in Los Angeles County. SUSTAIN considers certain BMP properties as “decision variables,” meaning that they are permitted to change within a given range during model simulation to support BMP selection and placement optimization. As BMP size changes, so do cost and performance. SUSTAIN runs iteratively to generate a cost-effectiveness curve comprised of optimized BMP combinations within the modeled study area (e.g., the model evaluates the optimal width and depth of certain BMPs to determine the most cost-effective configurations for planning purposes).

5.1.1.3 Overview of Large-Scale BMP Model

WMMS was specifically designed to dynamically evaluate effectiveness of BMPs implemented in subwatersheds for meeting downstream RWLs while maximizing cost-benefit. The structural BMP strategies included in WMMS primarily focus on (1) distributed green infrastructure BMPs and (2) regional BMPs. With the number of alternative combinations of BMPs possible in a watershed, the ability to evaluate and compare the benefits and costs of each scenario (representing a combination of multiple BMPs) is highly desirable. WMMS includes a sophisticated optimization routine that does this in the context of the large-scale routing network using an algorithm named NIMS (Zou et al. 2010).

However, given the relatively small spatial scale of the WMP area, NIMS was not applied for this study. Instead, a two-tiered approach was applied using the NSGA-II solution technique available in SUSTAIN (**Figure 5-5**). For Tier 1, treatment capacities were optimized for each contributing segment, which resulted in unique cost-effectiveness curves for each segment based on available opportunities therein. For Tier 2, the search space was composed of Tier 1 solutions, thereby streamlining the search process. The resulting Tier 2 curve represents the optimal large scale solution because it is comprised of optimized Tier 1 solutions. This approach is especially useful for prioritizing areas for management for scheduling implementation milestones.

Figure 5-5
Conceptual Illustration of the Two-Tiered Optimization Approach



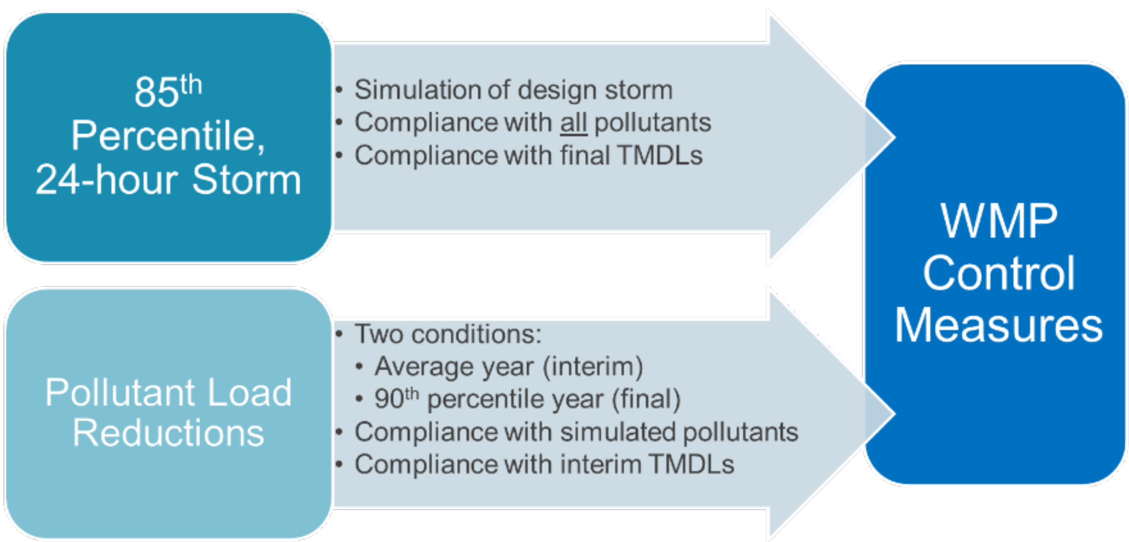
5.1.2 Water Quality Priorities and Compliance Pathways

The water quality priorities are the primary driver of the WMP and its BMPs. As shown in **Figure 5-6**, the Permit provides two pathways of numeric goals for addressing water quality priorities:

- Volume-based: Retain the standard runoff volume from the 85^{th} percentile, 24-hour storm
- Load-based: Achieve the necessary pollutant load reductions to attain RWLs and/or WQBELs

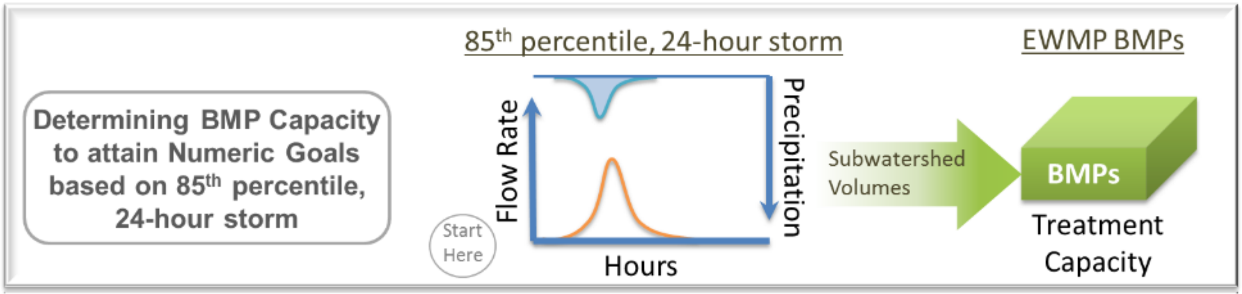
Both types of numeric goals were evaluated as part of this RAA to assess potential management implications associated with each pathway. It was decided by the Group that in the case that the level of BMP implementation effort for the numeric goal based on the 85^{th} percentile storm is similar to the pollutant-based numeric goal , the volume-based goal would be selected because it offers increased compliance coverage (applies to all final TMDL limits).

Figure 5-6
Two Types of Numeric Goals and WMP Compliance Paths



The process for determining the necessary cumulative BMP capacity for both distributed and regional BMPs in each segment in the WMP area depends on the type of numeric goal being addressed. For the volume-based (85^{th} percentile storm) approach, the necessary BMP capacity was determined through a design storm analysis (described in more detail below).

Figure 5-7
Illustration of Process for Determining Required BMP Capacities for the WMP using Volume-Based Numeric Goals through Simulation of the Design Storm



5.1.3 Determination of Wet Weather Critical Conditions for the RAA

This section describes the selection of the design storm as the critical condition for the RAA and WMP.

5.1.3.1 Selection of Design Storm as the Critical Condition and WMP Compliance Path

An initial step in the WMP RAA was a comparison of the volume reductions required by the load-based and volume-based numeric goals. The design storm pathway was selected as the critical condition and used to determine BMP capacities for WMP implementation.

5.1.3.2 Rainfall-Runoff Analysis for the 85th Percentile Design Storm

The volume associated with the 85th percentile, 24-hour storm varies by subwatershed. Each of the 67 subwatersheds (and corresponding 98 city-subwatershed areas) in the WMP area has a unique 85th percentile runoff volume, due to varying rainfall amounts and land characteristics (i.e. imperviousness, soils, slope, etc.). Shown in **Figure 5-8** are the rainfall depths associated with the 85th percentile, 24-hour storm for the County and ESGVWMA using rolling 24-hour periods between October 1, 1996 and September 30, 2011.

The 85th percentile rainfall values range between 0.84 and 1.09 inches within the WMP area, as summarized in **Figure 5-9**. At each location the storm distribution shown in **Figure 5-10** was used to temporally distribute the 24-hour rainfall volumes.

Figure 5-8
Rainfall Depths Associated with the 85th Percentile, 24-hour Storm

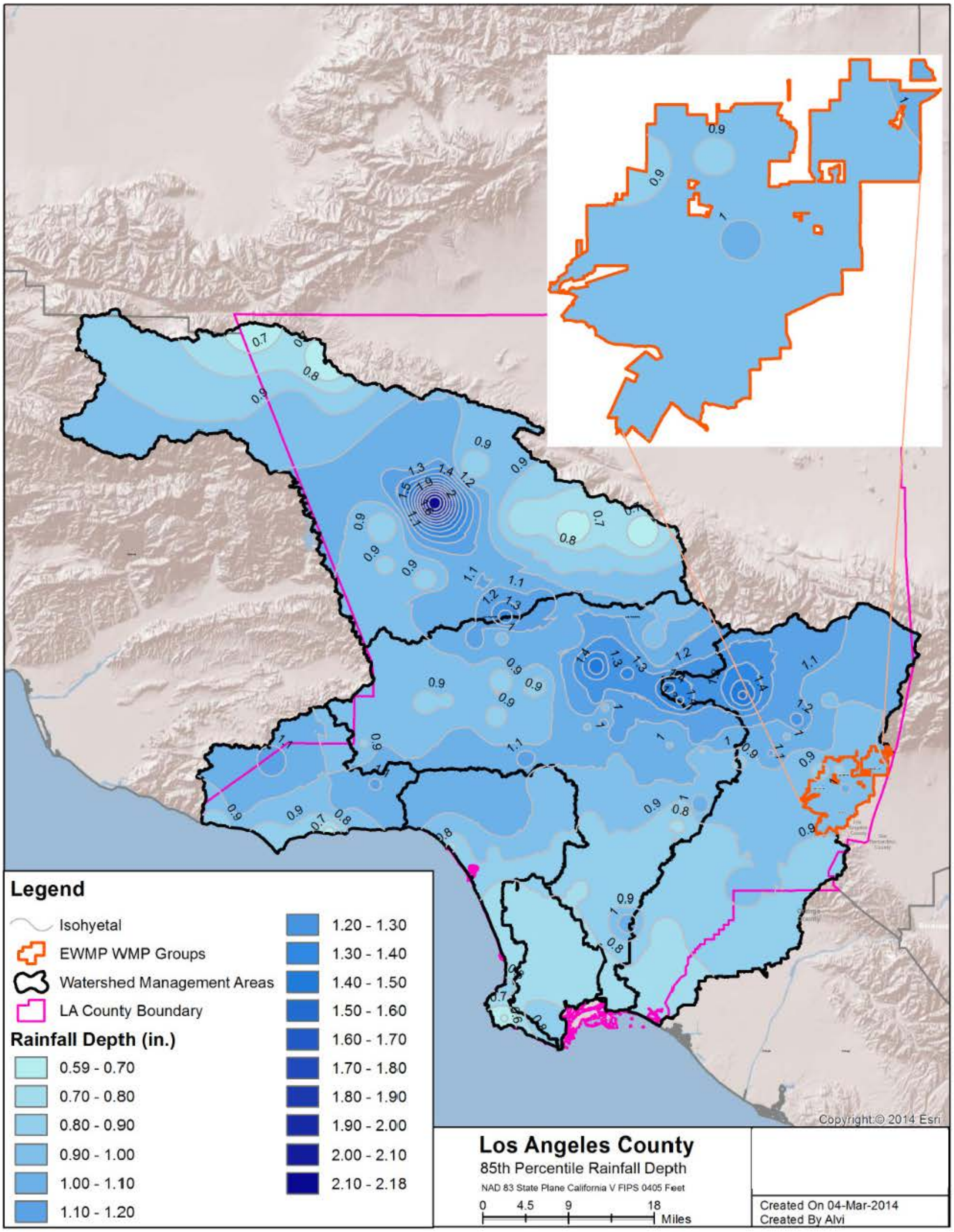


Figure 5-9
Areal Distribution Summary of 85th Percentile Rainfall in the ESGV Group Area

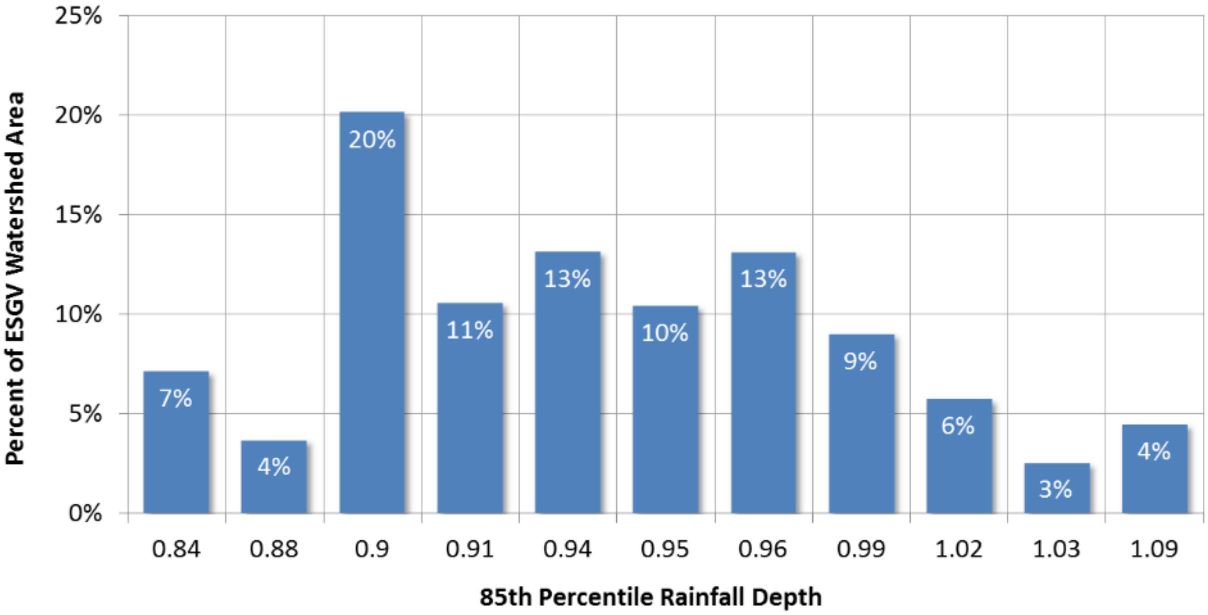
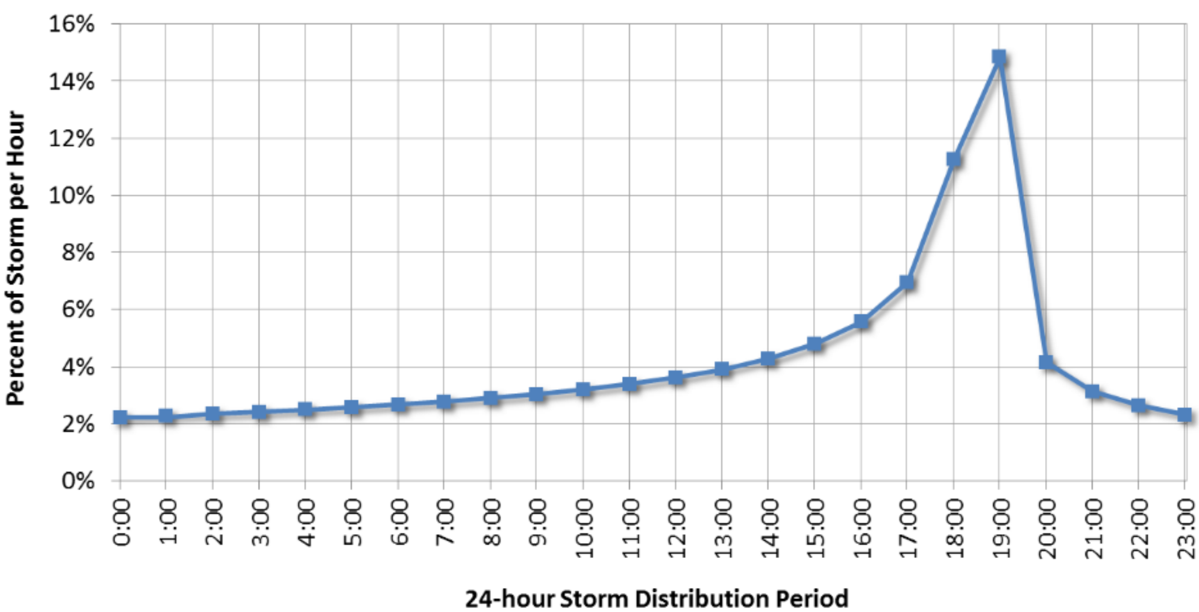


Figure 5-10
Temporal Distribution for 85th Percentile 24-hour Storm



Assuming saturated initial conditions and regionally-derived infiltration rates, the 85th percentile rainfall depths amounts were used as boundary conditions in the LSPC watershed model, to predict the associated runoff volumes for each of the 67 subwatersheds in the WMP area. Those runoff volumes represent the volumes that would need to be retained in order to attain the numeric goals associated with the 85th percentile, 24-hour storm.

Figure 5-11 shows area-based runoff exceedance associated with 85th percentile rainfall in the East San Gabriel Valley (ESGV) watershed (the amount of rainfall that is ultimately discharged from each subwatershed during the design storm). About 50 percent of the ESGV subwatershed areas experiences 0.2 inches or more of runoff under the 85th percentile, 24-hour storm. About 10 percent of the area experiences about 0.5 inches or more of runoff. **Figure 5-12** and **Table 5-1** summarize the treatment capacities required to retain the 85th percentile, 24-hour rainfall by assessment point and jurisdiction.

In Section 5.2, these volumes are (1) separated by subwatershed and jurisdiction [for a total of 90 city-subwatershed areas], (2) separated between MS4 and non-MS4 sources, and (3) used to determine the capacities of BMPs needed to retain the design storm. The required MS4 treatment capacity equals the design storm volume minus the volume of non-MS4 sources (i.e. CALTRANS and industrial permittees).

Figure 5-11
Area-Based Runoff Associated with 85th Percentile Runoff in the ESGV Watershed

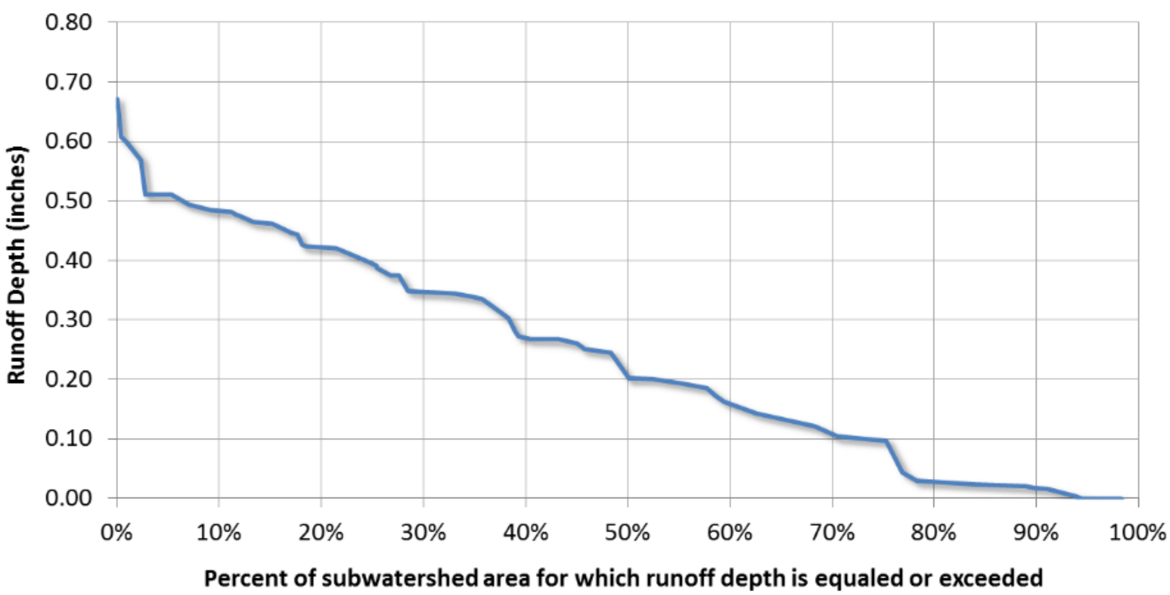


Figure 5-12
Treatment Capacity Required to Retain Runoff Associated with the 85th Percentile, 24-hour Storm (by assessment point and jurisdiction)

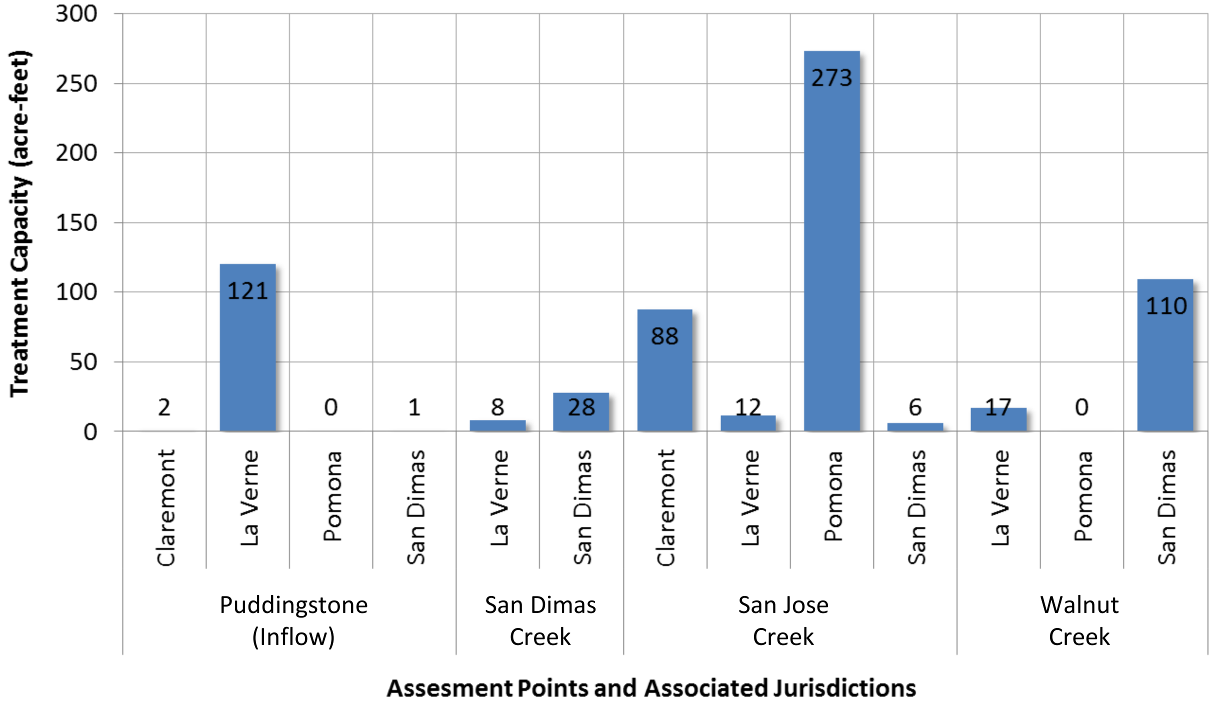


Table 5-1
Design Storm Runoff Volume per Jurisdiction

Jurisdiction	Required MS4 Treatment Capacity, acre-ft
Claremont	85.2
La Verne	126.9
Pomona	204.9
San Dimas	126.9
Total	**543.9**

5.1.4 Calculation of Required Reductions for Dry Weather

The fact that the WMP conservatively establishes control measures based on the design storm means that full attainment of all non-stormwater (dry weather) and stormwater (wet weather) limitations will be achieved by wet weather control measures implemented for the final compliance date. As such, the RAA for dry weather simply needs to demonstrate that wet weather control measures will also achieve the required dry weather reductions for interim milestones.

To calculate required reductions for dry weather, the data compiled for assessment of water quality priorities were analyzed. Existing concentrations were compared to applicable WQBELs, as shown in **Table 5-2**. The required reductions were calculated based on the median existing concentrations (applicable to milestones) and 90th percentile existing concentrations (selected as a critical condition for application to final limits). In general, rates of exceedances for non-bacteria pollutants were very low for dry weather conditions, such that comparison of 90th percentile concentrations to the targets results in 0% required reduction. For bacteria, the median concentration of *E. coli* was below the single sample maximum, but the 90th percentile value corresponds to a required dry weather reduction of 70% for attainment of final limits. In other words, for dry weather, the limiting pollutant is *E. coli*. Available data suggest that metals are attaining during dry weather conditions, though this will be re-evaluated during CIMP implementation.

Table 5-2
Calculated Required Reductions for Dry Weather Components of the ESGV WMP

Waterbody	Pollutant	WQBEL/ Target	Required Reduction for Assessment of Milestones (based on median concentrations)		Required Reduction for Assessment of Final Limits (based on 90th percentile concentrations)	
			50th Percentile Existing Concentration	Percent Reduction based on Mean 50th Percentile Load	90th Percentile Existing Concentration	Percent Reduction based on Mean 90th Percentile Load
Thompson Creek	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	Se ug/L	5	1.07	**0%**	2.67	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
San Dimas Wash	Cu ug/L	18.7	4.56	**0%**	10.54	0%
	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
Puddingstone Inflow	Cu ug/L	18.7	4.56	**0%**	10.54	0%
	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%

5.2 BMP CAPACITIES TO RETAIN THE 85TH PERCENTILE STORM FOR FINAL COMPLIANCE

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. For each jurisdiction, the design storm runoff volume serves as the compliance target for each of its subwatersheds. As long as the volume associated with the 85th percentile storm is retained within a subwatershed (prior to interim dates for interim volumes and prior to final dates for final volumes), then that subwatershed is in compliance with the receiving water limitations and WQBELs of the Permit (see Section E.2.e).

In order to provide the initial BMP scenario for WMP implementation, categories of BMPs and their capacities that could be used to retain the 85th percentile storm were analyzed. Two broad categories of BMPs – BMPs inside the right of way (ROW BMPs) and BMPs outside the ROW (non-ROW BMPs) – were used to describe the networks of BMPs needed to retain the 85th percentile storm, as shown in **Figure 5-13**. By focusing the BMP analysis on ROW versus non-ROW, the analysis emphasizes location/opportunities to capture stormwater, as the ROW and public parcels are where MS4 BMPs can be implemented most cost-effectively.[2] Runoff from non-MS4 facilities was also estimated such that the WMP does not commit the Group to retain runoff that is the responsibility of non-MS4 sources.

The overall approach for conducting the capacity analysis described below is represented in **Figure 5-14**, which cumulatively adds the volume reductions from these different BMP categories to retain the design storm volumes. The baseline "runoff balance" between ROW and non-ROW areas is summarized in **Figure 5-13** and detailed in **Table 5-3** for the four RAA assessment points – Thompson Creek, San Dimas Wash, Puddingstone Reservoir and Walnut Creek. See **Figure 5-15** for an index of subwatersheds in the WMP area (the index numbers are used in detailed tables including **Table 5-3**).

[2] A significant portion of runoff does not drain to the streets/ROW and so capture of that runoff in the ROW [e.g., with green streets] is not feasible – non-ROW BMPs are the only option [e.g., regional BMPs prior to discharge to receiving water].

Figure 5-13
Representation of Right of Way and non-Right of Way BMPs and Stormwater Routing

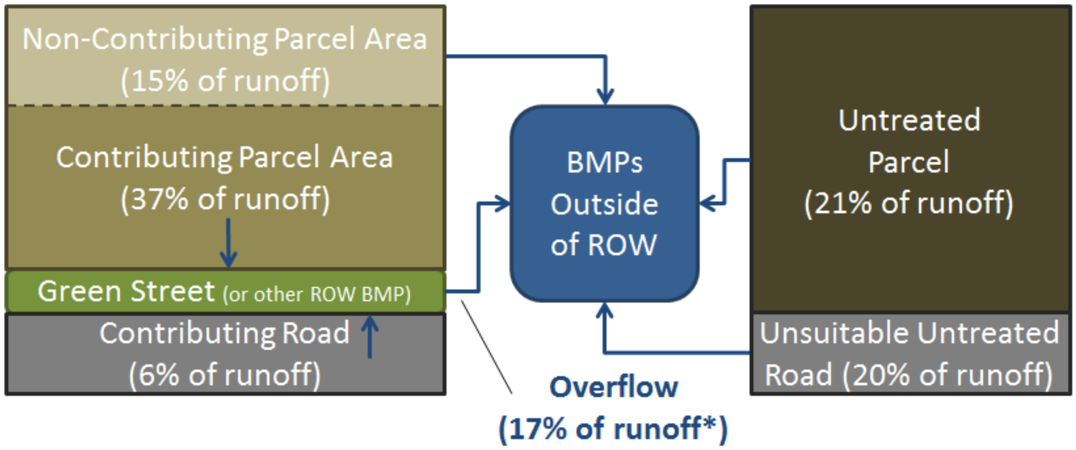


Figure 5-14
Representation of the Capacity Analysis to Achieve Volume Reductions for the 85th Percentile Storm

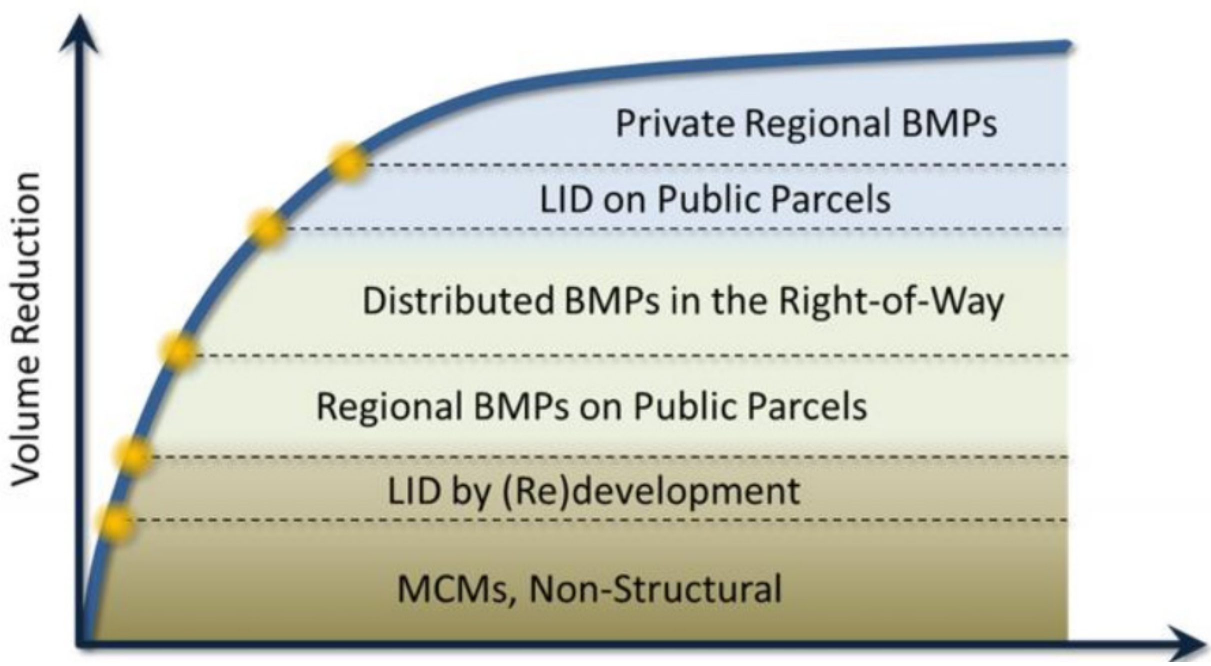


Figure 5-15
Index of Subwatersheds in the ESGV WMP Area

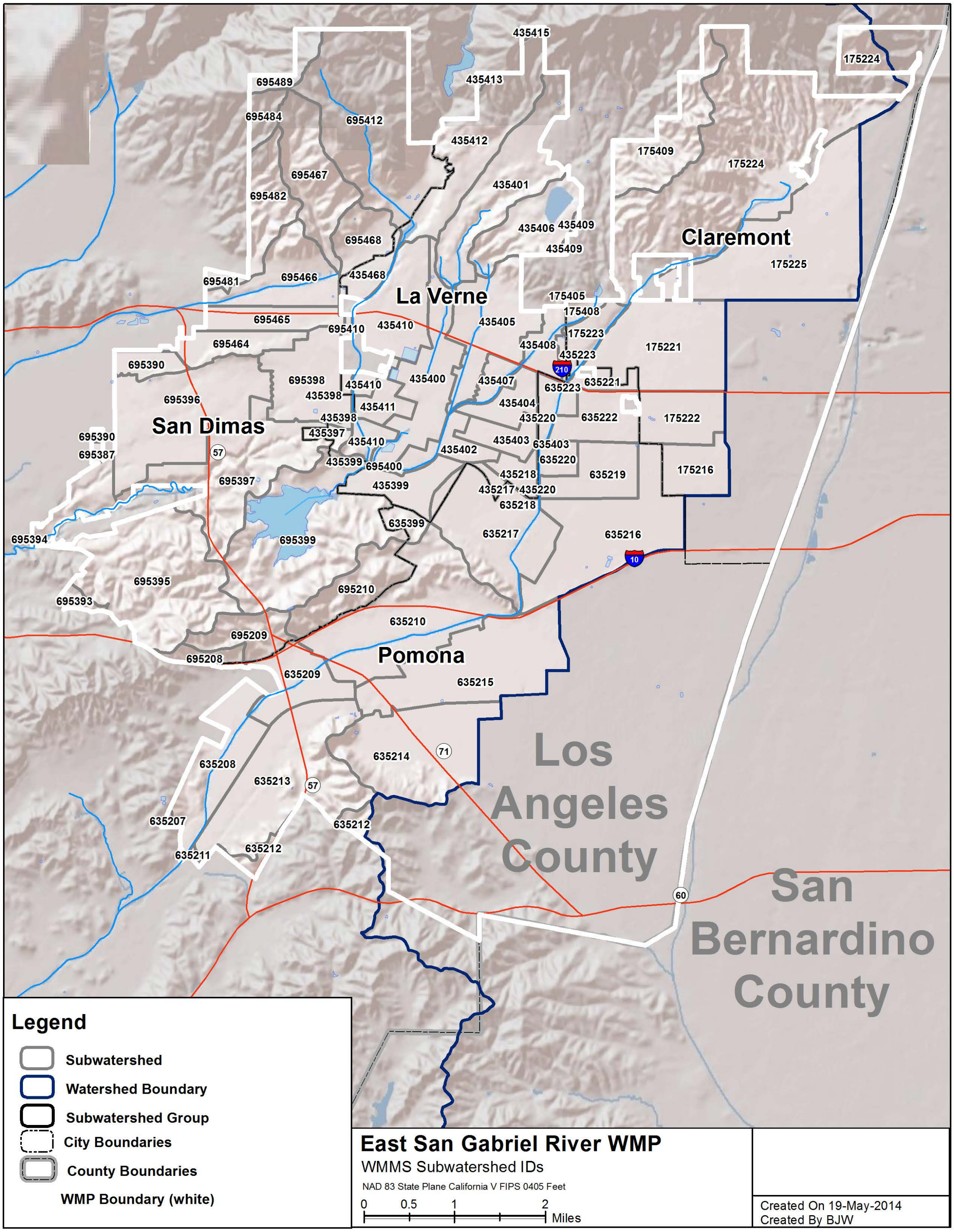


Table 5-3
Overall Watershed-specific Design Storm Volumes and Balance of ROW and non-ROW Runoff Volumes

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
Puddingstone	5400*	5400*	22.20	9.28	1.23	5.96	2.18	3.56
	5402	5402	7.80	2.48	0.34	1.75	1.01	2.23
	5405*	5405*	19.28	9.35	1.06	2.34	3.55	2.98
	5407	5407	5.97	4.17	0.65	1.04	0.08	0.03
	5408*	5408*	8.24	2.40	0.21	0.93	3.45	1.24
	5410*	5410*	21.77	7.44	0.87	3.07	6.00	4.39
	to 5401	to 5401	11.06	4.73	1.03	1.44	2.87	0.99
	to 5403*	to 5403*	5.93	3.22	0.67	0.80	0.01	1.23
	to 5404	to 5404	6.98	3.88	0.59	0.97	0.25	1.29
	to 5406	to 5406	7.26	2.10	0.28	1.53	3.36	-
	to 5409*	to 5409*	0.22	0.10	0.00	0.02	0.09	-
	to 5411*	to 5411*	6.62	3.89	0.55	1.56	0.01	0.60
Puddingstone Total			123.34	53.03	7.48	21.43	22.88	18.53
San Dimas Wash	5412*	5412*	5.59	1.60	0.45	0.83	1.97	0.75
	5464	5464	4.59	1.51	0.24	0.48	0.82	1.54
	5465	5465	9.11	1.73	0.12	1.21	1.82	4.23
	5466	5466	6.10	2.83	0.71	0.72	0.89	0.96
	5468*	5468*	7.95	3.56	0.80	1.96	0.81	0.82

Table 5-3 (continued)

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
	5481	5481	1.42	0.97	0.13	0.24	0.00	0.07
	5482	5482	0.50	0.09	0.02	0.02	0.28	0.09
	5484	5484	0.00	-	-	-	0.00	-
	5489	5489	0.00	-	-	-	0.00	-
	to 5413	5413	0.00	-	-	-	0.00	-
		5415	0.00	-	-	-	0.00	-
		to 5413 Total	0.00	-	-	-	0.00	-
	to 5467	to 5467	0.95	0.05	0.00	0.03	0.82	0.06
San Dimas Wash Total			36.21	12.33	2.47	5.48	7.41	8.52
Thompson Wash/ San Jose Creek	5207	5207	0.04	-	-	-	0.04	-
	5211	5211	0.02	-	-	-	0.02	-
	5212	5212	1.98	0.02	0.00	0.01	0.57	1.38
	5213	5213	31.32	6.41	0.50	4.57	14.66	5.18
	5214	5214	26.09	10.64	1.40	4.13	4.27	5.64
	5215	5215	42.55	14.42	2.06	8.48	7.55	10.05
	5217*	5217*	42.36	17.63	3.15	4.96	13.99	2.63
	5220*	5220*	11.89	5.10	0.68	3.27	0.99	1.86
	5223*	5223*	4.39	1.96	0.36	0.50	0.87	0.69
	to 5208*	5208	12.88	3.84	0.24	2.50	3.67	2.63
		5209	18.51	2.53	0.15	0.98	4.40	10.46

Table 5-3 (continued)

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
	to 5208*	5210	32.11	9.64	0.95	2.84	8.21	10.46
		to 5208* Total	63.51	16.01	1.34	6.32	16.29	23.55
	to 5216*	to 5216*	48.63	25.43	3.80	9.23	2.16	8.01
	to 5218*	to 5218*	6.09	2.51	0.21	1.39	0.72	1.25
	to 5219	to 5219	14.09	5.04	0.84	3.99	2.00	2.22
	to 5221*	to 5221*	33.84	16.00	2.39	4.33	3.74	7.39
	to 5222*	to 5222*	21.81	12.22	2.11	3.62	1.01	2.84
	to 5224	to 5224	7.32	1.49	0.16	0.79	4.12	0.76
	to 5225	to 5225	22.69	10.00	1.83	3.65	2.56	4.64
Thompson Wash/ San Jose Creek Total			378.62	144.89	20.82	59.25	75.58	78.08
Walnut Creek	5387	5387	0.81	0.55	0.04	0.14	0.00	0.08
	5390	5390	3.69	2.04	0.30	0.70	0.23	0.42
	5393	5393	0.01	-	-	-	0.01	0.00
	5394	5394	0.00	-	-	-	-	-
	5395	5395	21.11	2.71	0.55	0.69	12.84	4.32
	5397*	5397*	19.15	4.10	0.33	2.18	7.63	4.91
	5399*	5399*	18.62	0.95	0.01	1.33	2.21	14.11
	to 5396	to 5396	42.99	20.49	3.07	7.58	4.89	6.95
	to 5398*	to 5398*	20.58	10.82	1.71	4.13	1.01	2.91
Walnut Creek Total			126.96	41.66	6.01	16.74	28.83	33.71
Grand Total			665.13	251.90	36.78	102.90	134.70	138.84

5.2.1 Modeling of Individual BMP Types to Achieve Design Storm Retention

The runoff balance for ROW and non-ROW areas (**Figure 5-13** and **Table 5-3**) provides the foundation for BMP modeling to develop the initial BMP scenario for the ESGV WMP. Six types of BMPs were represented using LSPC and SUSTAIN as described in **Table 5-4**. The BMP modeling provides a robust initial strategy for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities provide reasonable assurance for attaining Permit limitations, though adaptive management will be used to refine these strategies over time.

The details of the BMP modeling are provided in **Appendix A**. In general, modeling analyses were used to determine the capacity of green streets, LID and rooftop runoff reduction to retain the design storm. It was common for maximum implementation of these control measures to be insufficient for retaining the design storm runoff from a subwatershed. In this case, the remaining capacity was assigned to regional BMPs, which will be identified in the future (likely on a combination of public and private parcels). The summary of required BMP capacities by jurisdiction for ROW and non-ROW BMPs is provided in **Table 5-5**.

Table 5-4
Types of BMPs Simulated for Design Storm Retention

BMP Type	Category	Type	Description
Green streets	ROW	Distributed	Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane.
LID due to new/ redevelopment	Non-ROW	Distributed	Retention of runoff from new and redeveloped private parcels subject to LID ordinances.
LID on public parcels	Non-ROW	Distributed	Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, dry wells, etc.)
Rooftop Runoff Reduction	Non-ROW	Distributed	Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
Regional BMPs	Non-ROW	Regional	Regional BMPs to capture and retain runoff from relatively large upstream areas prior to discharge to receiving waters. In general, the remaining runoff after implementation of the previous BMP categories was assigned to regional BMPs.

Table 5-5
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Required MS4 Treatment Capacity, acre-ft*	Potential Non-ROW BMP Capacity, acre-ft	Potential Capacity of Distributed ROW BMPs, acre-ft	Remaining Reduction assigned to Regional BMPs, acre-ft
Claremont	85.2	12.66 (15%)	32.5 (38%)	40.0 (47%)
La Verne	126.9	13.34 (11%)	39.2 (31%)	74.4 (59%)
Pomona	204.9	53.18 (26%)	55.9 (27%)	95.8 (47%)
San Dimas	126.9	14.72 (12%)	33.4 (26%)	78.7 (62%)
Total	**543.9**	**93.91 (17%)**	**161.0 (30%)**	**289.0 (53%)**

*Excludes design storm runoff from non-MS4 permitted facilities and California Department of Transportation (Caltrans) and County of Los Angeles islands

5.2.2 Final MS4 Compliance Targets and BMP Capacities by Subwatershed

The culmination of the analyses for this WMP is two key metrics, one for Permit compliance and one for WMP implementation, as follows (**Table 5-6** thru **Table 5-9**):

1. **Final MS4 Compliance Targets based on design storm runoff volume:** the runoff volume from the simulated design storm for each subwatershed, minus contributions from Caltrans and industrial permittees, is the ultimate final compliance metric for the Claremont, La Verne, Pomona and San Dimas. See column with orange font labeled "Compliance Target" in **Table 5-6** thru **Table 5-9**.

2. **Initial scenario of BMPs to retain design storm runoff volume:** the specific BMPs used to retain the design storm volume are not, per se, a component of compliance determination. Instead, over time each agency will report and demonstrate that the *cumulative* effect of projects implemented over time add up to the required design storm retention volumes for interim milestones and final targets. However, the initial scenario of BMPs for WMP implementation and their costs may be the most beneficial outcome of the WMP. See columns with orange font labeled "Implementation Plan" in **Table 5-6** thru **Table 5-9**, which represent the initial WMP implementation scenario. Over time, through adaptive management, the cities will likely "shift" from among different types of BMPs (e.g., increase implementation of green streets and reduce implementation of regional BMPs) or substitute alterative BMPs altogether (e.g., implement dry wells instead of green streets). These shifts will be supported by analyses to show the substituted BMPs provide an equivalent volume reduction as the replaced BMPs. Initial analyses to support adaptive management are provided in **Appendix A**.

The final compliance targets in **Table 5-6** thru **Table 5-9** are used to develop compliance targets for interim milestones in the next subsection. Recall the index of subwatersheds in presented in **Figure 5-15**. The ROW and non-ROW BMP capacities for the initial WMP scenario are also shown graphically in **Figure 5-16** and **Figure 5-17**.

Table 5-6– La Verne Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
				Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	5.10	1.90	10,043	0.07	0.14	0.00	3.00	-	-	-
	5468*	5468*	3.20	2.03	9,313	0.02	0.12	0.00	1.03	-	-	-
		5413	0.00	-	-	-	-	-	-	0.00	-	-
		5415	0.00	-	-	-	-	-	-	0.00	-	-
	to 5413	to 5413 Total	0.00	-	-	-	-	-	-	0.00	-	-
San Dimas Wash Total			8.30	3.93	19,356	0.09	0.26	0.00	4.02	0.00	-	-
Thompson Wash/ San Jose Creek	5217*	5217*	1.02	0.18	137	0.02	0.00	0.02	0.80	-	-	3.17
	5220*	5220*	0.29	0.05	232	0.00	0.01	0.00	0.23	-	0.02	-
	5223*	5223*	1.07	0.13	596	0.00	0.09	0.02	0.83	-	-	-
	5218*	5218*	4.98	1.02	3,873	0.22	0.30	0.05	3.39	-	0.66	0.35
	5221*	5221*	0.00	-	-	-	-	-	0.00	-	-	-
San Jose Creek Total			7.34	1.37	4,838	0.25	0.39	0.09	5.25	-	0.68	3.51
Walnut Creek	5397*	5397*	1.25	0.36	2,726	0.02	0.05	0.00	0.83	-	-	-
	5399*	5399*	2.59	0.50	422	0.00	0.00	0.01	2.08	-	-	11.66
	5398*	5398*	1.34	0.35	1,316	0.03	0.05	0.01	0.90	-	0.29	-
Walnut Creek Total			5.19	1.21	4,464	0.05	0.10	0.01	3.81	-	0.29	11.66
Puddingstone	5400*	5400*	13.88	4.09	20,170	1.01	0.52	0.16	8.09	-	1.00	7.32
	5402	5402	6.87	1.19	4,688	0.19	0.15	0.06	5.29	-	0.77	0.17
	5405*	5405*	19.27	5.69	25,206	0.20	1.02	0.28	12.09	-	-	-
	5407	5407	5.97	1.62	6,897	2.26	0.14	0.06	1.89	-	-	-
	5408*	5408*	6.39	1.12	5,003	0.12	0.45	0.10	4.60	-	-	-
	5410*	5410*	16.67	4.90	22,611	1.78	0.83	0.11	9.04	-	1.91	2.30
	5401	5401	11.06	5.20	25,679	0.28	0.42	-	5.16	-	-	-
	5403*	5403*	5.93	2.38	12,133	0.07	0.21	0.04	3.22	-	-	-
	5404	5404	6.98	2.28	10,126	0.46	0.36	0.08	3.80	-	-	-
	5406	5406	7.26	2.27	11,373	0.13	0.18	0.00	4.68	-	-	-
	5409*	5409*	0.22	0.11	1,027	0.00	0.01	-	0.09	-	-	-
	5411*	5411*	5.54	1.80	8,344	0.01	0.32	0.09	3.32	-	-	1.08
Puddingstone Total			106.05	32.65	153,256	6.53	4.60	0.98	61.29	-	3.68	10.86
Grand Total			126.88	39.16	181,915	6.91	5.35	1.08	74.37	0.00	4.64	26.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-7– San Dimas Design Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT — DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Estimated Equivalent Length of Green Street BMPs (ft)	DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM: Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	NON-MS4 RUNOFF: Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	0.49	0.06	574	0.13	0.01	-	-	0.29	-	-
	5464	5464	3.76	1.50	9,025	0.23	0.13	0.03	1.86	-	0.83	-
	5465	5465	5.30	1.32	5,325	-	0.16	0.04	3.79	-	3.19	0.61
	5466	5466	6.10	2.50	15,331	0.22	0.23	0.12	3.04	-	-	-
	5468*	5468*	4.46	1.75	8,319	0.06	0.09	0.00	2.57	-	0.05	0.24
	5467	5467	0.95	0.02	116	0.39	0.01	0.00	-	0.54	-	-
San Dimas Wash Total			21.07	7.15	38,691	1.03	0.62	0.19	11.26	0.83	4.07	0.86
Thompson Wash/ San Jose Creek	to 5208*	5208	0.13	0.00	13	0.00	0.00	0.00	-	0.12	0.88	-
		5209	1.53	0.02	123	0.01	0.09	0.02	1.39	-	3.06	-
		5210	0.26	0.00	-	0.17	-	-	-	0.10	0.11	-
		to 5208* Total	1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
San Jose Creek Total			1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
Walnut Creek	5387	5387	0.81	0.26	1,182	-	0.07	0.02	0.46	-	-	-
	5390	5390	3.56	1.66	7,505	0.32	0.15	0.04	1.39	-	0.13	-
	5393	5393	0.01	-	-	-	0.00	-	-	0.01	-	-
	5394	5394	0.00	-	-	-	-	-	0.00	-	-	-
	5395	5395	20.98	3.07	15,544	0.08	0.76	0.08	16.98	-	0.13	-
	5397*	5397*	14.58	1.99	8,140	1.45	0.42	0.26	10.45	-	2.86	0.46
	5399*	5399*	2.54	0.12	539	0.66	0.04	0.04	-	1.70	1.71	0.00
	5396	5396	39.92	11.77	50,697	2.73	1.42	0.83	23.18	-	2.75	0.32
	5398*	5398*	18.68	6.52	27,599	1.29	0.81	0.28	9.77	-	0.27	-
Walnut Creek Total			101.08	25.39	111,206	6.53	3.67	1.55	62.23	1.71	7.85	0.77
Puddingstone	5400*	5400*	0.00	-	-	0.00	-	-	0.00	-	-	-
	5410*	5410*	0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
	5411*	5411*	0.00	-	-	0.00	0.00	0.00	0.00	-	-	-
Puddingstone Total			0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
Big Dalton Wash	5481	5481	1.42	0.54	2,986	0.32	0.06	0.01	0.49	-	-	-
	5482	5482	0.50	0.07	451	0.00	0.03	0.01	-	0.39	-	-
	5484	5484	0.00	-	-	-	-	-	-	0.00	-	-
	5489	5489	0.00	-	-	-	-	-	-	0.00	-	-
Big Dalton Wash Total			1.92	0.61	3,437	0.32	0.09	0.02	0.49	0.39	-	-
Grand Total			126.89	33.44	154,716	8.44	4.50	1.78	75.58	3.15	15.97	1.63

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-8– Pomona Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
				Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5207	5207	0.00	-	-	0.00	-	-	-	0.00	-	0.04
	5211	5211	0.02	-	-	0.00	-	-	-	0.02	-	-
	5212	5212	0.87	0.03	166	0.11	0.02	0.01	0.70	-	1.12	-
	5213	5213	24.98	2.45	8,240	5.78	0.42	2.35	13.98	-	3.15	3.19
	5214	5214	22.61	8.44	35,542	1.48	0.73	3.06	8.90	-	2.71	0.76
	5215	5215	37.41	8.70	34,802	0.88	1.04	6.14	20.64	-	4.29	0.85
	5217*	5217*	8.22	2.42	48,744	0.71	0.26	0.40	4.43	-	0.11	29.85
	5220*	5220*	10.16	2.76	9,684	0.26	0.37	1.82	4.95	-	0.81	0.62
	5223*	5223*	0.39	0.11	710	0.02	0.03	0.15	0.07	-	-	-
	to 5208*	5208	5.49	0.99	4,452	0.87	0.47	1.76	1.40	-	1.29	5.09
		5209	7.78	1.90	7,949	0.56	0.19	0.97	4.17	-	5.64	0.51
		5210	25.09	7.52	38,068	2.86	1.10	3.22	10.39	-	6.54	0.12
		to 5208* Total	38.36	10.40	50,469	4.30	1.76	5.95	15.96	-	13.47	5.72
	5216*	5216*	34.15	12.19	56,820	3.14	1.31	4.67	12.83	-	1.01	-
	5218*	5218*	0.10	-	-	-	-	-	0.10	-	-	-
	5219	5219	13.12	3.43	10,638	0.17	0.21	1.40	7.92	-	0.96	-
	5221*	5221*	4.26	0.80	3,395	-	0.17	1.56	1.73	-	-	-
	5222*	5222*	9.99	4.15	19,490	0.48	0.39	1.53	3.44	-	-	-
San Jose Creek Total			204.64	55.88	278,700	17.33	6.71	29.04	95.66	0.02	27.63	41.03
Walnut Creek	5399*	5399*	0.11	-	-	0.08	-	-	-	0.03	0.00	-
Walnut Creek Total			0.11	-	-	0.08	-	-	-	0.03	0.00	-
Puddingstone	5408*	5408*	0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
	5403*	5403*	0.00	0.00	0	-	-	0.00	0.00	-	-	-
Puddingstone Total			0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
Grand Total			204.91	55.89	278,717	17.41	6.71	29.06	95.79	0.06	27.64	41.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-9– Claremont Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT — DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Estimated Equivalent Length of Green Street BMPs (ft)	DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM: Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	NON-MS4 RUNOFF: Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5223*	5223*	2.90	1.70	9,186	0.04	0.11	0.03	1.02	-	0.03	-
	5216*	5216*	12.69	3.10	10,684	0.17	0.62	1.60	7.20	-	0.78	-
	5221*	5221*	26.52	10.98	49,192	3.02	1.05	1.61	9.86	-	3.06	-
	5222*	5222*	11.82	4.76	20,932	0.83	0.50	0.54	5.19	-	-	-
	5224	5224	7.32	0.98	5,319	0.23	0.30	0.38	-	5.42	0.00	-
	5225	5225	22.23	10.81	53,058	0.75	0.71	0.13	9.82	-	0.46	-
San Jose Creek Total			83.48	32.34	148,371	5.04	3.29	4.30	33.09	5.42	4.34	-
Puddingstone	5405*	5405*	0.00	-	-	-	0.00	0.00	0.00	-	-	-
	5408*	5408*	1.69	0.16	302	0.01	0.01	0.01	1.51	-	-	-
	5409*	5409*	0.00	-	-	0.00	-	-	-	0.00	-	-
Puddingstone Total			1.70	0.16	302	0.01	0.01	0.01	1.51	0.00	-	-
Grand Total			**85.18**	32.49	**148,673**	**5.05**	**3.30**	**4.31**	34.60	5.42	**4.34**	**-**

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Figure 5-16
ROW BMP Volume Reduction for Initial WMP Scenario to Achieve Final Compliance Targets

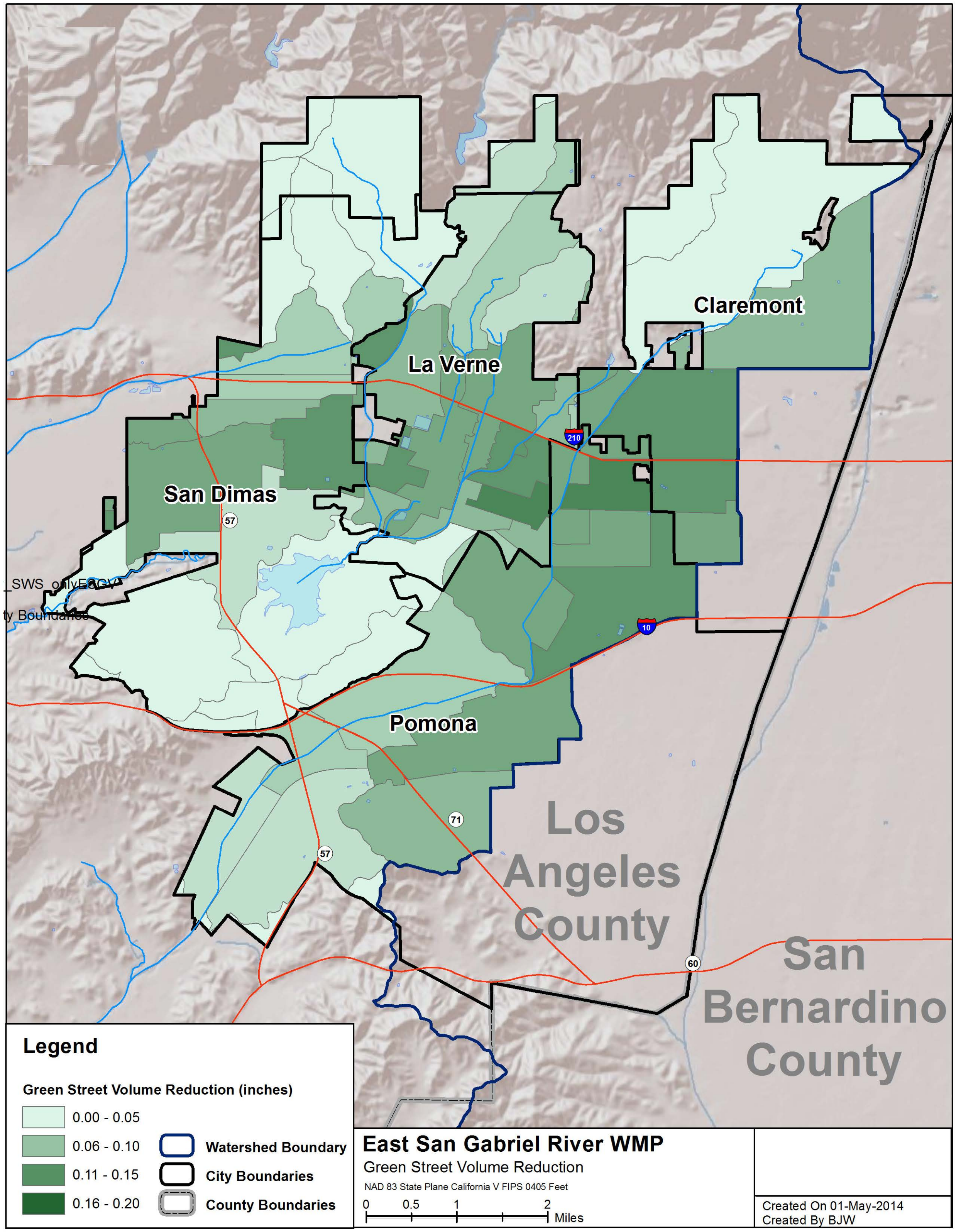
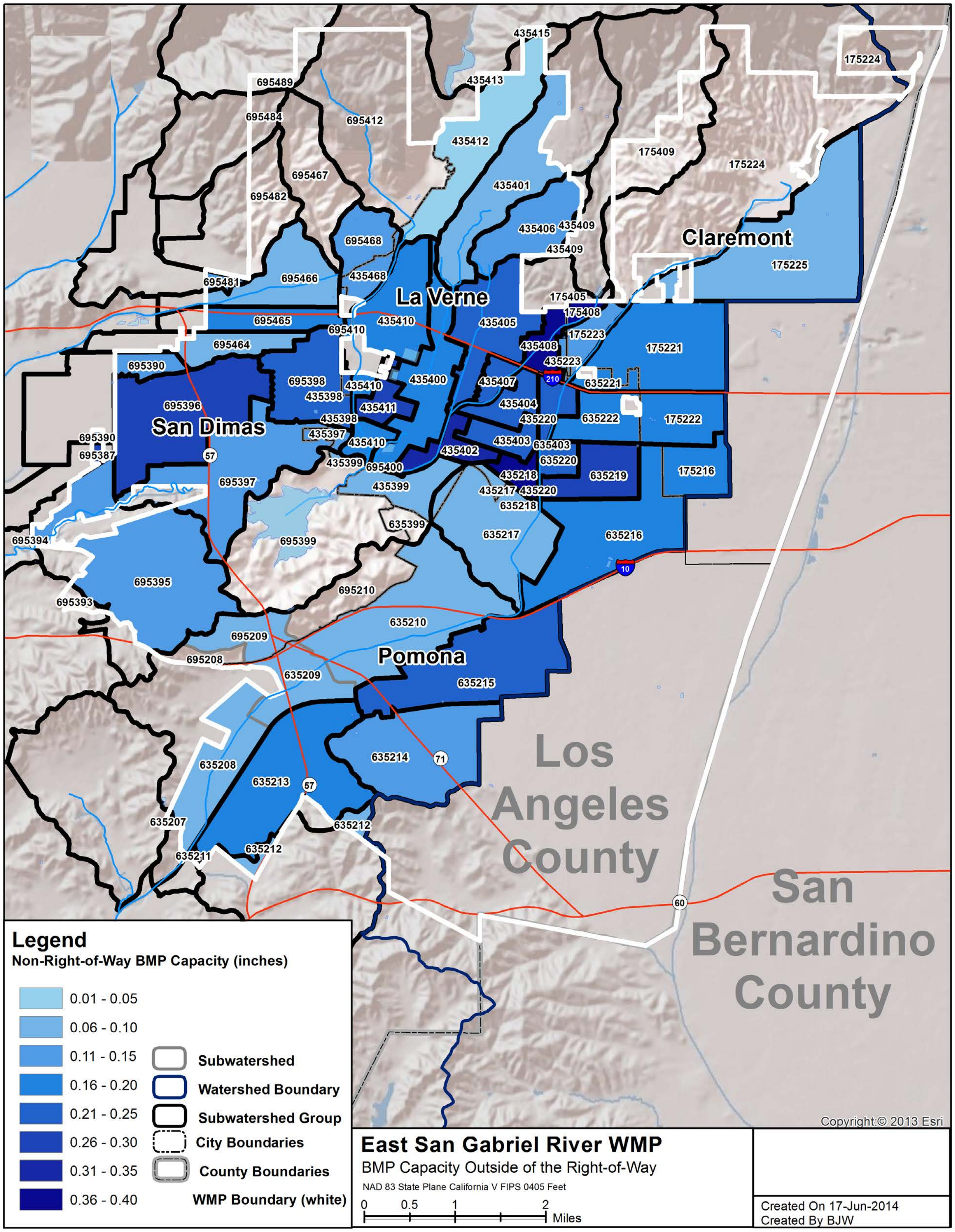


Figure 5-17
BMP Capacity Outside of the Right-of-Way for Initial WMP Scenario to Achieve Final Compliance Targets



5.3 COMPLIANCE TARGETS AND CONTROL MEASURES FOR ATTAINMENT OF INTERIM MILESTONES

The Permit prescribes that scheduling of multiple pollutants within the WMP should consider whether "class" of the non-TMDL pollutants are similar to TMDL pollutants, where class considers pollutant fate and transport, control measures, and BMP implementation timeline. For the design storm approach, achievement of the non-stormwater and stormwater retention goals represents compliance with all TMDL classes and pollutants. As such, attainment of the design storm volumes to address the San Gabriel River Metals TMDL will also address the other TMDLs in the watershed (Category 1 WQ Priorities), the 303(d) listings in the WMP area (Category 2 WQ Priorities) and Category 3 WQ Priorities in the WMP area.

To establish BMP scheduling for the WMP, the percent milestones of the San Gabriel River Metals TMDL were applied directly to the design storm volumes. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. Implementation of BMP capacities on the schedule listed in **Table 5-10** represents compliance with all RWLs and WQBELs of the Permit. As part of the adaptive management process, capacities will be modified based on monitoring through the CIMP for the WMP area. Annual reporting by each jurisdiction will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets in **Table 5-11.** During adaptive management, these capacities may be reduced if monitoring data suggest that water quality conditions are better than assumed when the RAA herein was developed. Because the 10% milestone falls within the current Permit term, it is described in more detail below.

Note that the design storm target also addresses dry weather milestones because non-stormwater is also retained. As described in Section 5.1.4, required dry weather reductions for metals are very low and implementation of control measures to achieve wet weather milestones has reasonable assurance of also attaining dry weather milestones. For bacteria, the scheduling of implementation for the wet weather milestones of metals TMDL will be used as the schedule for dry weather bacteria compliance (10% milestone in 2017, 35% milestone in 2020, 65% milestone in 2023 and final compliance by 2026). Attainment of the dry weather bacteria TMDL by 2026, within 12 years, is well within the timeline provided for other bacteria TMDLs. The LA River Bacteria TMDL provided a 25-year dry weather compliance schedule.

Table 5-10
Schedule of Total Maximum Daily Loads and Milestones for the ESGV Group WMP

TMDL	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestone (Bolded numbers indicated milestone deadlines within the current Permit term)[1]													
			2012	**2013**	**2014**	**2015**	**2016**	2017	2020	2023	2024	2026	2028	2030	2032	2036
San Gabriel River Metals	% of MS4 area Meets WQBELs	Dry						30%	70%	100%						
		Wet						10%	35%	65%		100%				
Los Angeles/ Long Beach Harbors Toxics	Meet WQBELs	All	12/28												3/23	
			Interim												Final	
Puddingstone Reservoir Nutrients, Mercury, and Toxics	Meet WLAs	All	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in the WMP.													

[1] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.

Table 5-11
Schedule of Control Measures and BMP Capacities to Interim Milestones for the ESGV WMP

Jurisdiction	Major Watershed	10% Milestone, Year 2017 (acre-ft)	35% Milestone, Year 2020 (acre-ft)	65% Milestone, Year 2023 (acre-ft)	100% Milestone, Year 2026 (acre-ft)
Claremont	Puddingstone	**See description in Section 5.3** 1. Implementation of Rooftop Runoff Reduction Program 2. LID due to new and re-development 3. Increased construction site inspections 3. Verification of post-construction BMPs 4. Increased catch basin cleaning	0.6	1.1	1.7
	San Jose Creek		29.2	54.3	83.5
	Claremont Total		**29.8**	**55.4**	**85.2**
La Verne	Puddingstone		37.1	68.9	106.1
	San Dimas Wash		2.9	5.4	8.3
	San Jose Creek		2.6	4.8	7.3
	Walnut Creek		1.8	3.4	5.2
	La Verne Total		**44.4**	**82.5**	**126.9**
Pomona	Puddingstone		0.1	0.1	0.2
	San Jose Creek		71.6	133.0	204.6
	Walnut Creek		0.0	0.1	0.1
	Pomona Total		**71.7**	**133.2**	**204.9**
San Dimas	Big Dalton Wash		0.7	1.2	1.9
	Puddingstone		0.3	0.6	0.9
	San Dimas Wash		7.4	13.7	21.1
	San Jose Creek		0.7	1.2	1.9
	Walnut Creek		35.4	65.7	101.1
	San Dimas Total		**44.4**	**82.5**	**126.9**
Total			***190.3***	***353.5***	***543.9***

5.3.1 Attainment of the 10% Milestone for the ESGV WMP

The 10% milestone for the San Gabriel River Metals TMDL requires that 10% of the WMP area be in compliance with applicable final metals RWLs and WQBELs. For application of the milestone to the entire WMP area for all water quality priorities, the milestone is interpreted to mean that 10% of the *required load reductions* are achieved by each jurisdiction (this interpretation is also consistent with other metals TMDLs). This interpretation means the 10% milestone may equate to less than an actual 10% reduction. For example, if the final required load reduction of the limiting pollutant was 70%, then the 10% milestone represents a 7% reduction. For the ESGV WMP, the limiting pollutant is likely zinc, which has required reductions of 60-70% in other areas/reaches for the San Gabriel River Metals TMDL. As such, it is expected the 10% milestone for the ESGV WMP represents a 7% reduction or less.

A series of control measures have been identified by the Group to achieve compliance with the 10% milestone, as shown in **Table 5-12**. All of these control measures represent enhanced BMP implementation from the baseline condition that existed prior to the Permit. A highlight of the suite of control measures for the 10% milestone is a Rooftop Runoff Reduction Program (Program), which will seek to incentivize control measures on private property to capture rooftop runoff prior to discharge to the MS4. The Program will emphasize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source. While the program will provide an important vehicle for educating the public on the need to retain stormwater runoff, the program will also be designed such that volume reductions are quantifiable and trackable. A detailed schedule for implementation of the Program is shown in **Figure 5-14**. Additionally, other control measures identified for attainment of the 10% milestone are related to MCM requirements that increased in the current Permit (compared to previous Permit) including LID due to new/redevelopment, increased construction site inspections, verification of post-construction BMPs and increased catch basin cleaning. All of these measures have been shown to demonstrate load reduction in a watershed.

Table 5-12
Control Measures to be Implemented for Attainment of 10% Milestone

BMP Type	Description of Control Measure/ Enhancement from Baseline
Planned or Recently Constructed BMPs within Permit Term	See **Table 4-2** for list of planned or recently constructed projects within the ESGV Group area.
Rooftop Runoff Reduction	Implement an incentive program for private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection, rain barrel deployment and other BMPs as needed (see **Table 5-13**).
LID due to new/redevelopment	The ESGV jurisdictions have reported 2 to 3 parcels per year being subject to LID requirements in recent years. By 2017, this represents an estimated 32 to 48 additional parcels being subject to LID retention standards based on the 85th percentile storm.
Enhanced Construction Site Inspections	The previous permit (Part 4.E.2.b) required a minimum of one construction site inspection during the wet season. The new permit (Part VI.D.8.j) requires a minimum of three construction inspections for each construction project: prior to land disturbance, during active construction, during final landscaping/site stabilization. In addition, the new permit states that construction sites larger than 1 acre shall be inspected (1) when two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA, (2) within 48-hours of a ½-inch rain event, and (3) at least once every two weeks. If the construction site is not deemed a significant threat to water quality and does not discharge to a tributary listed by the state as an impaired water for sediment or turbidity under the CWA §303(d), the new permit states that inspection frequency shall be at least monthly.
Verification of Post Construction BMPs	The previous permit (Part 4.D.8) indicated that verification of post-construction (SUSMP) BMPs included, at a minimum, written conditions which assign responsibility to a developer, public entity, or Home Owners Association to conduct maintenance on post-construction BMPs at least once a year. The new permit (Part VI.D.7.d.iv) expands on these requirements by requiring each permittee to implement a tracking system and inspection and enforcement program for post-construction BMPs. The new permit requires the development of a post-construction BMP maintenance inspection checklist and requires inspection at least once every 2 years after project completion.
Enhanced Catch Basin Cleaning	The new permit (Part VI.D.9. h.vii) requires that the Permittee shall install trash excluders, or equivalent devices, on or in catch basins or outfalls to prevent the discharge of trash to the MS4 or receiving water no later than four years after the effective date of the new Permit.

Table 5-13
Schedule for Implementation of the Rooftop Runoff Reduction Program

Achievement	Completion Date
Develop draft Rooftop Runoff Program including the source control BMPs to be incentivized. The effort will collect estimates the proportion of current parcels (by land use type) with downspouts directly plumbed into MS4 collection system. The program will also evaluate the feasibility of implementation on municipally-owned parcels.	July 2015
Begin outreach program to incentivize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source.	December 2015
Revised draft Rooftop Runoff Program, if necessary, based on lessons learned during initial implementation period.	July 2016
Quantify and report estimate volume reduction from implemented downspout disconnects and rain barrel deployment.	January 2017

5.4 SPATIAL BMP SEQUENCING FOR EFFECIENT IMPLEMENTATION

The WMMS model is a powerful tool to support BMP implementation. The WMMS was used to support efficient *spatial* BMP sequencing (i.e., watershed areas to prioritize for early implementation actions), based on the cost-effectiveness of implemented control measures subwatershed-by-subwatershed. Through adaptive management the sequencing of BMPs will be refined with additional data provided by the CIMP and other lessons learned. Prescribing sequencing is challenging because BMP implementation over space will also be driven by other factors, including already-scheduled capital improvement projects (e.g., street improvements), public perception issues, and political needs. Continuous simulation and optimization were used to evaluate the pollutant removal effectiveness of the proposed BMPs in each subwatershed. The variables that influence BMP effectiveness include the combination of pollutant generating land uses in the watershed, proximity to receiving waters, imperviousness, and BMP infiltration capacity. The metric that was used to "rank" subwatersheds for each jurisdiction was model-predicted BMP construction cost per pound of pollutant load removed, which can be used as a planning-level approximation of "BMP efficiency". This type of sequencing is intended to promote significant early improvements in water quality.

As shown in **Figure 5-18**, the prioritization process involved grouping the subwatersheds into three tiers for each jurisdiction:

- **Tier 1:** Represents the watershed runoff volumes necessary to meet the 35 percent interim milestone in 2020, based on the highest-ranked subwatersheds
- **Tier 2:** Represents the watershed runoff volumes necessary to meet the 65 percent interim milestone in 2023, based on the next highest-ranked subwatersheds
- **Tier 3:** Represents the watershed runoff volumes necessary to meet the 100 percent interim milestone in 2026, based on the lowest-ranked subwatersheds.

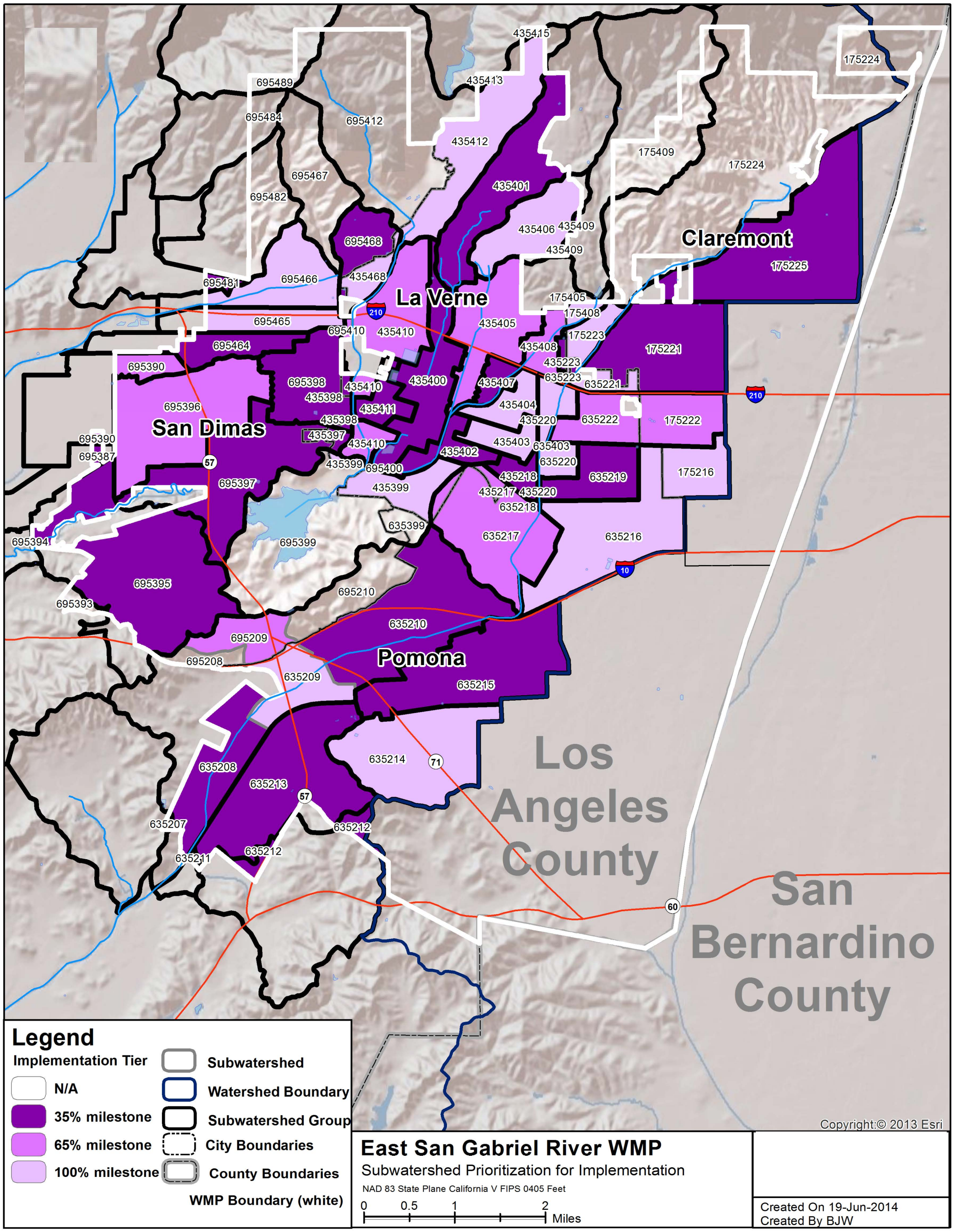
These tiers were developed to help individual jurisdictions focus on areas with the highest likelihood of BMP performance success. Detailed maps and tables of each subwatershed for individual jurisdictions are provided in **Appendix B**. It should be noted that watersheds with runoff that largely originated from open space were excluded from the efficiency analysis and are labeled as "N/A" on these maps and tables, as BMP implementation for open space runoff is not a goal of this WMP.

Although this efficiency analysis provides a planning-level framework to guide implementation to meet the Permit deadlines, a more detailed retention strategy will be necessary for each jurisdiction to successfully manage and document the WMP implementation process. A comprehensive retention plan might include the following elements:

- Standard BMP design templates and/or guidance
- Detailed identification of high priority areas (i.e., cross streets) for green street retrofits
- Detailed evaluation of public parcels available for regional BMPs implementation
- Process for linking BMP retrofits to planned capital improvement projects
- Tracking tools for BMP locations, size, type, and drainage area

Ultimately, by tracking the progress of the program, adaptive management strategies can be employed to refine the assumptions of this analysis and hopefully be used to streamline the implementation process and reduce the overall burden of compliance.

Figure 5-18
Prioritization of BMP Implementation by Subwatershed



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6 Implementation Process

The WMP describes the level and types of BMP implementation that will result in attainment of the RWLs and WQBELs of the Permit. The 85th percentile, 24-hour "design storm" volume was used by the RAA to calculate the necessary BMP capacities in each subwatershed in the WMP area. The design storm analysis provides an integrated approach to address all pollutants and all TMDLs regulated by the Permit. Based on this analysis, the networks of BMPs needed to attain the RWLs and WQBELs is extensive. Even if all available and suitable ROWs in the WMP area are retrofitted with bioretention / green streets, that capacity is insufficient to meet the design storm targets. The additional BMP capacity would be achieved with BMPs outside of the ROW (non-ROW BMPs), with options including both regional BMPs (infiltration basins) and distributed BMPs (green infrastructure on private parcels through the LID ordinances, green infrastructure on public parcels, downspout disconnection programs, etc.). The WMP describes how the BMPs may be implemented spatially in a more cost-effective manner to achieve the largest improvements in water quality as early as possible in the implementation schedule (i.e., which subwatersheds should be targeted first).

Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of the BMP implementation effort. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

6.1 ESTIMATED COST OF IMPLEMENTATION

The level of effort and funding needed to implement the BMPs identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these budget increases will not be possible.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

An order-of-magnitude cost estimate was developed, based on required capacity to achieve full compliance through implementation of structural and non-structural BMPs. The order-of-magnitude cost estimate for implementation of the WMP is shown in **Table 6-1**. It is important to note that these estimates are provided as order-of-magnitude cost estimates for planning level purposes. Actual expenditures will vary depending on the nature of implementation of the WMP.

6.1.1 Assumptions for Cost Estimate

For planning purposes, cost estimates for implementation of control measures within the WMP area have been developed. There are a variety factors that cause uncertainty in these cost estimates, including:

- The paucity of existing water quality monitoring data in the WMP area, the extent to which control measures will need to be implemented for permit compliance is uncertain.
- Site-specific information on costs of various control measures is not available. Costs have been estimated based on projects in other areas.
- Information regarding long-term operation and maintenance costs of various control measures is sparse.

Cost estimates provided herein will be updated during the adaptive management process as more information becomes available. Notwithstanding the uncertainties listed above, the cost estimates presented here are considered to be accurate on an order of magnitude scale, based on assumptions described below:

1. The low estimate assumes regional BMPs on public land only and a suite of lower cost LID BMPs. The high estimate assumes land acquisition is required to construct regional BMPs and a suite of higher cost LID BMPs.
2. The cost of administering a downspout disconnection program is based on data provided by the City of Portland's Downspout Disconnection Program website (Portland, 2014). The cost estimate of the program used a $53 per household rebate. The estimate uses an assumption of 10% of all households in the ESGV Group Cities to participate in the program over the next 5 years.
3. The cost estimate to administer a LID Ordinance of New/Redevelopment is based on reported "development planning" costs from the ESGV Group's 2012 Annual Reports (Attachment U-4).
4. Regional BMP cost estimates are based on planning-level cost estimates provided in the 2010 "Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed" (Los Angeles, 2010). Actual costs of regional BMPs will vary depending of number of BMPs constructed, cost of land acquisition, BMP type, and constructability factors.
5. The estimated costs of LID on public parcels are based on data provided from The Journal for Surface Water Quality Professionals (Grey, 2013).

Table 6-1
Order-of-Magnitude Cost Estimate of WMP Implementation

Low Estimate				
	Estimated Cumulative Expenditure by WMP Milestone			
Implementation Activity	**2017 (10% milestone)**	**2020 (35% milestone)**	**2023 (65% milestone)**	**2026 (100% milestone)**
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$88,000,000**	**$163,400,000**	**$251,400,000**
Regional BMPs	$ -	$36,300,000	$67,300,000	$103,600,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$6,800,000	$12,600,000	$19,400,000
Total	**$25,091,000**	**$138,553,000**	**$239,246,000**	**$352,579,000**

High Estimate				
	Estimated Cumulative Expenditure by WMP Milestone			
Implementation Activity	**2017 (10% milestone)**	**2020 (35% milestone)**	**2023 (65% milestone)**	**2026 (100% milestone)**
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$190,800,000**	**$354,500,000**	**$545,300,000**
Regional BMPs	$ -	$116,300,000	$216,000,000	$332,300,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$29,600,000	$55,000,000	$84,600,000
Total	**$25,091,000**	**$241,353,000**	**$430,346,000**	**$646,479,000**

6.2 ADAPTIVE MANAGEMENT PROCESS

As new program elements are implemented and information is gathered over time, the WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to address changing conditions. The adaptive management process includes a re-evaluation of water quality priorities, an updated source assessment, an effectiveness assessment of watershed control measures, and a RAA. The CIMP will gather additional data on receiving water conditions and stormwater/non-stormwater quality to inform these analyses. This process will be repeated every two years as part of the adaptive management process.

6.2.1 Re-characterization of Water Quality Priorities

Water quality within the WMP area will be re-characterized using data collected as a result of the CIMP implementation to include the most recent data available. WBPCs may be updated as a result of changing water quality. These classifications will be important for refocusing improvement efforts and informing the selection of future watershed control measures.

6.2.2 Source Assessment Re-evaluation

The assessment of possible sources of water quality constituents will be re-evaluated based on new information from the CIMP implementation efforts. The identification of non-MS4 and MS4 pollutant sources is an essential component of the WMP because it determines whether the source can be controlled by watershed control measures. As further monitoring is conducted and potential sources are better understood, the assessment becomes more accurate and informed.

6.2.3 Effectiveness Assessment of Watershed Control Measures

The evaluation of BMP effectiveness is an important part of the adaptive management process and the overall WMP. Implementation of the CIMP can provide a quantitative assessment of structural BMP effectiveness as it relates to actual pollutant load reduction to determine how selected BMPs have performed at addressing established water quality priorities. In addition, the adaptive management process is a required step for the customization of MCMs as detailed in Section 4. Effectiveness assessment becomes important for the selection of future control measures to be considered.

6.2.4 Update of Reasonable Assurance Analysis

The data gathered as a result of the CIMP will support adaptive management at multiple levels, including (1) generating data not previously available to support model updates and (2) tracking improvements in water quality over the course of WMP implementation. As described in Section 5, the RAA is an iterative process that depends on the continuous refinement and calibration of the watershed models used.

6.3 REPORTING

Annual reporting will be completed each year as part of the CIMP. In additional to assessing the overall progress of the WMP, the CIMP reporting will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets. Data obtained through CIMP monitoring will be used to determine the overall effectiveness of the WMP and will the next phases of WMP implementation during the adaptive management process.

7 REFERENCES

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Appendix A

Details on BMP Modeling for Retention of the Design Storm Runoff Volumes

A-1 BMP Capacities to Retain the 85th Percentile Storm

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. This appendix provides details on the modeling approach to quantify the volume reductions by BMPs included in the initial WMP implementation scenario.

A-2 Data Used

To evaluate BMP opportunities and available implementation areas, several key data sets were processed and formatted. **Table A-1** outlines the data set names, formats, descriptions, and sources.

Table A-1
Summary of Data

Data Set	Format	Description	Source
Parcels	GIS Shapefile	Outlines property boundaries and sizes	Los Angeles County (LAC) Assessor
Roads	GIS Shapefile	Shows street centerline network & classification by Topologically Integrated Geographic Encoding and Referencing (TIGER)	LAC GIS Portal
Land Use	GIS Shapefile	Subdivides the region into predefined land use categories with similar runoff properties. Each individual land use feature identifies the associated percent impervious coverage.	LAC WMMS Model
Subwatersheds	GIS Shapefile	Defines drainage areas to selected outlet points	LAC WMMS Model
Slopes	GIS Shapefile	Classifies regions by the slope category	LAC WMMS Model
Soils	GIS Shapefile	Outlines spatial extents of dominant soil types	LAC GIS Portal
Jurisdictions	GIS Shapefile	Establishes city and county boundaries	LAC GIS Portal
Drainage Network	GIS Shapefile	Identifies stormwater structure layout and conveyance methods	LAC GIS Portal
Groundwater Contours	GIS Shapefile	Illustrates groundwater depth as measured from the surface	LAC BOS
Soil Runoff Coefficient Curves	PDF File	Curves characterize effect of rainfall intensity on runoff coefficient per soil type	Hydrology Manual Appendix C (LADPW 2006)
Aerial Imagery	Layer File	Orthoimage of entire region	ESRI Maps & Data Imagery
Runoff Rates	Time Series	Hourly runoff for land uses for the design storm distribution and continuous simulation	LAC WMMS Model

A-3 NON-MS4 FACILITY RUNOFF

Each jurisdiction in the Group's WMP area is subject to stormwater runoff from non-MS4 facilities. In particular, Caltrans roads and facilities regulated by nontraditional or general industrial permits contribute to the design storm volume for each subwatershed. It will be important for these entities to retain their runoff and/or eliminate their cause/contribution to receiving water exceedances. The runoff from these non-MS4 facilities was therefore estimated and subtracted from the 85th percentile design storm volume target, as described below.

A-3.1 NON-MS4 PERMITTED AREAS

Non-MS4 permitted areas were identified based on the address list of permittees on the State Water Resources Control Board (SWRCB) website. Using the address information, corresponding parcel areas were selected using the LA County Assessor Parcel Viewer and the associated GIS Shapefile. The percentage of permitted land use area relative to the total land use area was calculated and the associated non-MS4 permitted area runoff as extracted from the WMMS runoff response output.

A-3.2 CALTRANS

The design storm runoff generated by Caltrans facilities was estimated using WMMS land use data. Areas labeled as Transportation consist of freeways and other extensive transportation facilities that tend to fall under Caltrans jurisdiction (versus areas labeled as Secondary Roads, which are managed by local transportation departments); these areas were assumed to be Caltrans facilities. Runoff from Transportation land uses, less runoff from any overlapping non-MS4 permitted areas identified above, was extracted from the WMMS model output for each subwatershed.

A-3.3 SUMMARY OF NON-MS4 FACILITY RUNOFF

Runoff volumes estimated for non-MS4 permitted areas and Caltrans were subtracted from the design storm volume to generate the required MS4 treatment capacity in **Table A-2**.

Table A-2
Design Storm Volume from Non-MS4 Facilities

Jurisdiction	Total Design Storm Runoff, ac-ft	Estimated Design Storm Runoff Volume from non-MS4 Permitted Facilities, ac-ft	Estimated Design Storm Runoff Volume from Caltrans, ac-ft	Required MS4 Treatment Capacity, ac-ft
Claremont	89.5	0.0	4.3	85.2
La Verne	157.5	26.0	4.6	126.9
Pomona	273.6	41.0	27.6	204.9
San Dimas	144.5	1.6	16.0	126.9
Total	**665.1**	**68.7**	**52.6**	**543.9**

A-3.4 RIGHT-OF-WAY BMP CAPACITY ANALYSIS

In order to highlight the potential structural BMP implementation approaches to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted. In this section, the right-

of-ways were evaluated for opportunities to locate BMPs. The BMP opportunity analysis described in this subsection evaluates the key components that affect the ability of ROW BMP networks to be effective: space available in the ROW, types of BMPs to site in the ROW, drainage areas that could potentially be treated by ROW BMPs, and estimated BMP infiltration rates.

Stormwater BMPs in the ROW are treatment systems arranged linearly within the street ROW and are designed to reduce runoff volumes and improve runoff water quality from the roadway and adjacent parcels. Implementing BMPs in the ROW provides an opportunity to meet water quality goals by locating BMPs in areas owned or controlled by a municipality to avoid the cost of land acquisition or establishing an easement. Implementing BMPs in the ROW allows for direct control of construction, maintenance, and monitoring activities by the responsible jurisdiction. Bioretention and permeable pavement are typically best suited for implementation in the ROW (**Figure A-1**).

Figure A-1
Conceptual schematic of ROW BMPs with an underdrain (Arrows indicate water path ways)

Not all roads are suited for ROW BMP retrofits; therefore, screening is required to eliminate roads where ROW BMP retrofits are impractical or infeasible due to physical constraints. While ROW BMP retrofits can be implemented in a variety of settings, the physical characteristics of the road itself such as the road type, local topography, and depth to groundwater can significantly influence the practicality of designing and constructing these features. A screening protocol was established to identify realistic opportunities for retrofits based on the best available GIS data. The opportunities identified during this process provide the foundation for the engineering analysis to determine the volume of stormwater that can be treated by ROW BMP

retrofits in the subject watersheds. This section describes the data and the screening process used to identify the best available roads for ROW BMP retrofits.

A-3.4.1 ROW BMP Screening

High traffic volumes, speed limits, slopes, and groundwater tables, impact the feasibility of ROW BMP implementation. Road classification data contains information typically useful for determining if the street is subject to high traffic volumes and speeds, and Census TIGER road data provides the best available road classification information for the study area. **Table A-3** shows the Master Address File (MAF)/TIGER Feature Classification Codes (MTFCC) deemed appropriate for ROW BMP retrofit opportunities. Only roads with the MTFCCs listed in **Table A-3** can be considered for ROW BMP retrofits in this screening analysis. All other roads are screened out.

Table A-3
ROW BMP MTFCC

MTFCC	Description
S1400	Local neighborhood road, rural road, city street
S1730	Alley
S1780	Parking lot road

In addition to the screening of road types, opportunities were further screened to remove segments that have steep slopes. BMP implementation on streets with grades greater than 10 percent present engineering challenges that substantially reduce the cost effectiveness of the retrofit opportunity. From the available slope information, roads were considered as retrofit opportunities if the slope was less than 10 percent.

The final screen applied to the roads is the depth to groundwater. Implementing ROW BMPs in areas where the groundwater table is high is not recommended due to the fact that the BMPs are rendered ineffective due to their storage capacity being seriously diminished with groundwater inflow. From the groundwater contours provided, roads were eliminated as opportunities if the depth to groundwater was less than 10 feet. Appendix B, Figure B-1 highlights the areas identified with groundwater depths of 10 feet or less. The highlighted areas provide a starting point for elimination, however it should be noted that further evaluation may be necessary based on local knowledge of areas with high groundwater tables or daylighting of perched groundwater layers as identified by the jurisdictions.

The results of the ROW BMP screening are presented in Appendix B. Appendix B shows the roads available for retrofit (highlighted in green) versus all of the roads within the study area. An overall watershed map and individual jurisdictional maps for each watershed show all the identified retrofit opportunities. The maps indicate that a majority of the roads within each jurisdiction pass through the screening as potential retrofits. It should be noted that due to the coarse nature of the road classification data, only freeways, highways, and major roads were eliminated in the classification screening process. In practice, retrofitting every street that passed through the screening will likely not be feasible and adaptive management strategies will be

necessary in the future to further refine the road classification data layer to more accurately identify road types suitable for ROW BMP retrofits.

The screened opportunities were used as the basis to evaluate the potential runoff volume reduction provided by ROW BMP implementations. In the following section, an engineering assessment is presented that determines the ROW BMP contributing drainage areas and the overall volume reductions achieved through ROW BMP implementation.

A-3.4.2 ROW BMP Configuration

The three most important assumptions necessary to evaluate BMP volume reduction performance are (1) the physical BMP configuration assumptions, (2) the contributing drainage area characteristics, and (3) the in-situ soil infiltration rates. By understanding the area draining to the BMPs and the volume capacity and function of the BMPs, an assessment can be performed to evaluate the potential of ROW retrofit BMPs to capture the required runoff volume in each subwatershed. This section summarizes the information and processes used to establish BMP configuration assumptions to be used for the runoff analysis presented in the following section.

A-3.4.3 BMP Assumptions Based on Green Streets

ROW BMPs consists of multiple types and combinations of stormwater treatment options. A well-established and often utilized ROW BMP is green streets. Green streets provide multiple benefits for pollutant and volume reduction and have been implemented in locations throughout the nation In the future and as updates are made to the WMP, other ROW BMPs may be incorporated to achieve the required volume reductions.

Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane. Prior to evaluating green street BMP treatment capacity, it is imperative to establish a configuration that can be assumed for typical implementation watershed-wide. This establishes the parkway space needed for the BMPs (plan view) and also determines the hydraulic function and storage capacity of the subsurface systems.

Bioretention systems are surface and subsurface water filtration systems, which use vegetation and underlying soils to store, filter, and reduce runoff volume while removing pollutants. **Figure A-2** represents a typical bioretention system incorporated into a green street design. Bioretention systems consist of a ponding depth and engineered soil media depth to treat runoff. **Table A-4** outlines typical widths, depths, and soil parameters associated with green street bioretention cells. Green streets were assumed to have no underdrains because the WMP emphasizes low impact development and stormwater volume reduction to achieve pollutant load reductions.

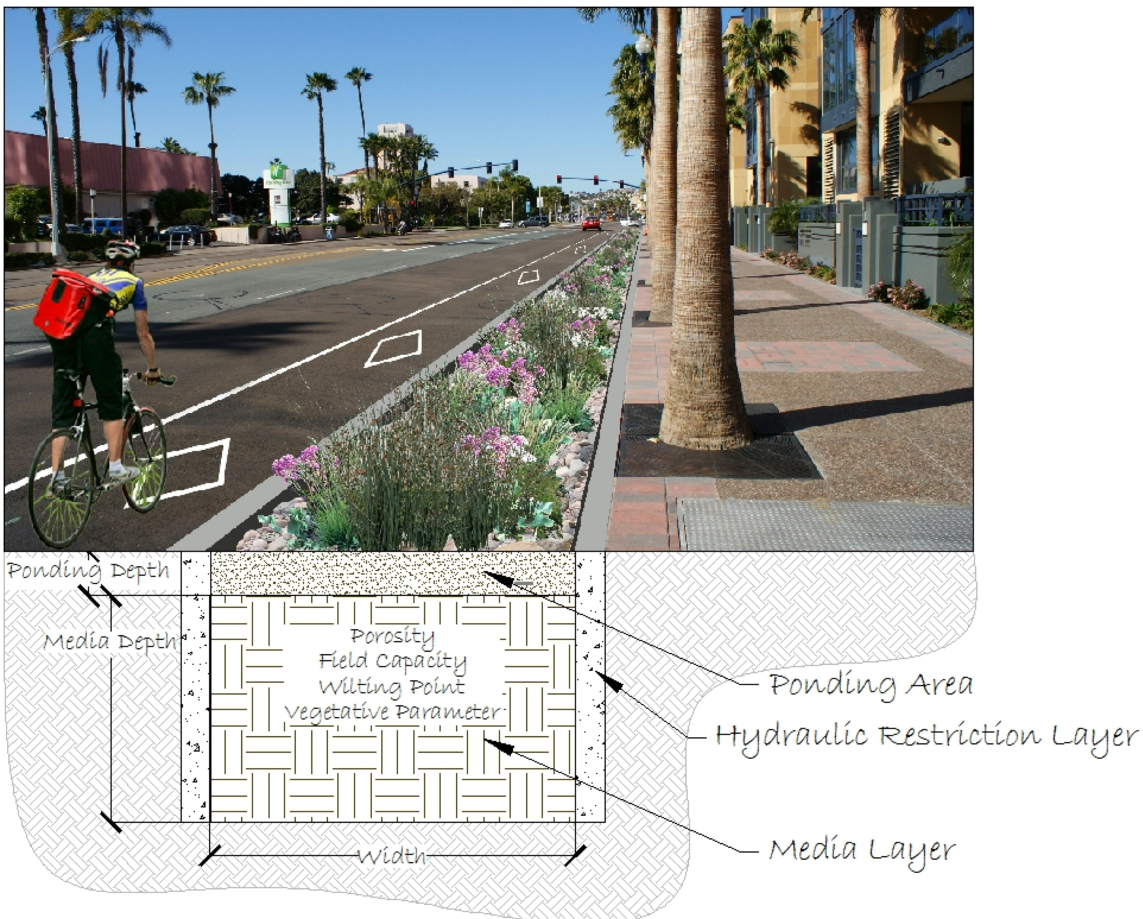
Driveways and utilities limit the road length that can be converted into a green street. From past experience and aerial imagery review in the local watersheds, it was determined that 30 percent of the road length could be considered as the maximum possibility for conversion into bioretention area. This factor was used to limit the total length of potential green street bioretention areas. The parameters outlined above and in the table below were assumed to be the typical green street BMP implementation configuration for the screening analysis and the BMP treatment capacity evaluation described in the next section.

Table A-4
BMP Design and Modeling Parameters for Subsequent Analyses

Component	Design Parameter	Value
Ponding Area	Depth	0.8 feet
	Width	4.0 feet
Media Layer	Depth	3.0 feet
	Porosity	0.4
Overall Profile	Effective Depth[1]	2.0 feet

[1] Effective depth is the maximum equivalent depth of water stored within the bioretention area less the depth displaced by soil media (vertical summation of surface ponding depth and void storage depth)

Figure A-2
Typical Bioretention Section View (City of San Diego 2011)

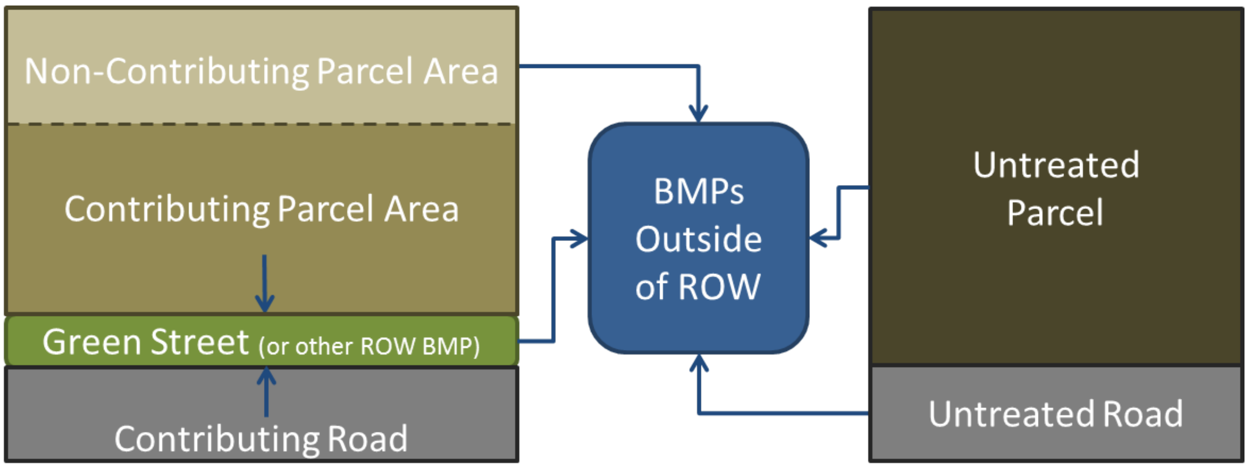


A-3.4.3.1 Contributing Drainage Area Analysis

The purpose of this analysis was to realistically represent the area, type, and impervious coverage of land draining to potential green streets throughout the entire watershed. This is a critical step in WMP development because it predicts what volume of runoff can be assumed treated by green streets and what remaining (untreated) runoff must be routed to regional BMPs

or addressed in other ways. The following engineering analyses were performed at a subwatershed-scale within the limits of available data and resources to estimate the maximum potential green street treatment capacity; given more detailed street-by-street drainage area data, the assumptions and results presented herein could be refined in future efforts to optimize green street treatment capacity. **Figure A-3** illustrates a simplified routing schematic used to represent the available runoff flow pathways to green street and regional BMPs throughout the watershed. The following subsections explain how each representative drainage area illustrated in **Figure A-3** was characterized.

Figure A-3
Green Streets Model Schematic (arrows denote direction of runoff routing; figure not to scale)



A-3.4.3.2 Typical Parcel Size & Street Frontage Analysis

The nature of the green street analysis requires an understanding of typical parcel sizes and how much of the parcel drains to the ROW. Much of the runoff from parcels and the road drains to the ROW and is conveyed downstream through curb, gutter, and pipes. By identifying the typical parcel size, frontage length, and associated road area that drains to a candidate right-of-way area (**Figure A-4**) the total area draining to potential green street retrofit opportunities was extrapolated throughout the watershed. For purposes of this study, only the high-density residential, multifamily residential, commercial, institutional, and industrial land uses were considered as contributing substantial runoff to the ROW (all other land uses contain minimal impervious area and thus contribute insubstantial runoff to the ROW).

The typical parcel size for each land use was determined by identifying all parcels for each land use. Once all the parcels were selected, the median parcel size for each land use was calculated and tabulated. This method evaluated thousands of parcels throughout the entire watershed and provided the most accurate depiction of the typical parcel size for each land use based on available data. Results are shown in **Table A-5**.

Each parcel is adjacent to a portion of the ROW where the green street would be implemented. A subset of parcels approximate to the median parcel size for each land use was selected to determine the average frontage length. The portion of the selected parcels that was in contact with the ROW was measured using desktop analysis tools and averaged between all parcels of the same land use. Results are shown in **Table A-5**.

Road area draining to green streets constitutes a substantial component of the total impervious drainage area. To establish road drainage areas, typical road widths were defined by sampling representative road segments located in each land use. Widths were measured from curb-to-curb using aerial orthoimagery and reported to the nearest even integer. The median sampled road width for each land use was calculated and compared with the City of Los Angeles Standard Street Dimensions (City of Los Angeles Bureau of Engineering 1999) for validation. To predict the resulting contributing road areas, the previously measured frontage length was multiplied by half the road width. Roads were assumed to be crowned; therefore, only half of the width would drain to one side of the road. Results are shown in **Table A-5**.

As discussed in Section A.3.4.3, only 30 percent of the frontage length could be converted into bioretention area. This factor was multiplied by the frontage length and used in limiting the total length of bioretention available within the model, as presented in **Table A-5**.

Figure A-4
Typical Parcel Area, Road Width, Road Area, and Frontage Length Schematic (figure not to scale)

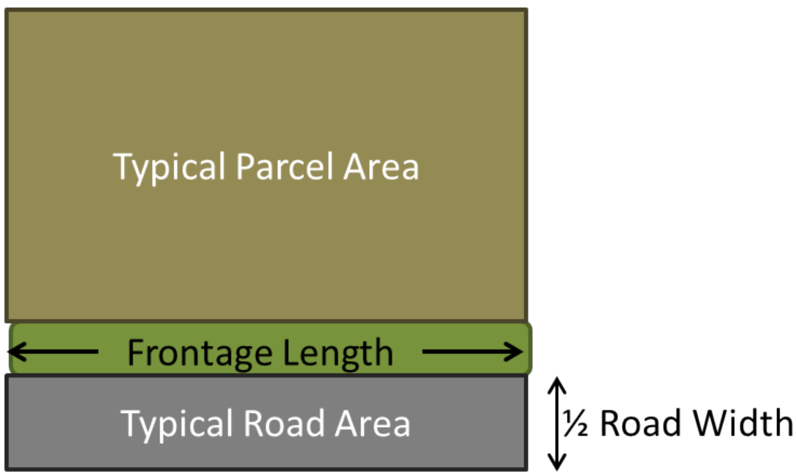


Table A-5
Typical parcel area, road area, and frontage length

Land Use	Typical Parcel Area, ft^2	Frontage Length, ft	Typical Road Width, ft	Typical Road Area, ft^2	BMP Length, ft
High-density Residential	6,528	57	38	1,083	17
Multifamily Residential	13,526	60	30	900	18
Commercial	12,429	100	63	3,150	30
Institutional	38,215	143	37	2,646	43
Industrial	26,467	117	46	2,691	35
Other Land Use (Open Space, Vacant, etc.)	n/a[1]	100	40	2,000	30

[1] assumed not draining to ROW

A-3.4.3.3 Contributing Parcel Area Analysis

Many parcels will not always entirely drain to the ROW because portions can be retained on-site or flow onto an adjacent property. The actual volume of water that can be treated by a green street BMP was determined by identifying the typical proportion of the parcel that drains to the ROW (as shown in context of the model schematic in **Figure A-5**). This step also determines the area, and associated runoff, that is *not* expected to drain to green streets and is routed directly to downstream regional facilities or other practices (herein referred to as non-contributing parcel area).

The contributing areas to the green street BMPs were found using random sampling and identifying the surrounding parcel drainage patterns. Parcels were selected using a random number generator and drainage areas were determined on a desktop analysis using topography, aerial imagery, and drainage infrastructure features. The average contributing percentage was identified by evaluating multiple sites. **Table A-6** shows the percent contributing areas by land use that were determined from this analysis.

The impervious coverage of contributing parcel areas was also characterized during this step so that runoff could be simulated and routed to green streets in each land use. This was performed by tabulating the imperviousness data from the WMMS Model for each individual land use feature. The area-weighted mean impervious coverage was then calculated for each land use type. Results are tabulated for each land use in **Table A-6**.

Figure A-5
Parcel Contributing Area to ROW (impervious varies by land use; arrows denote direction of runoff routing; figure not to scale)

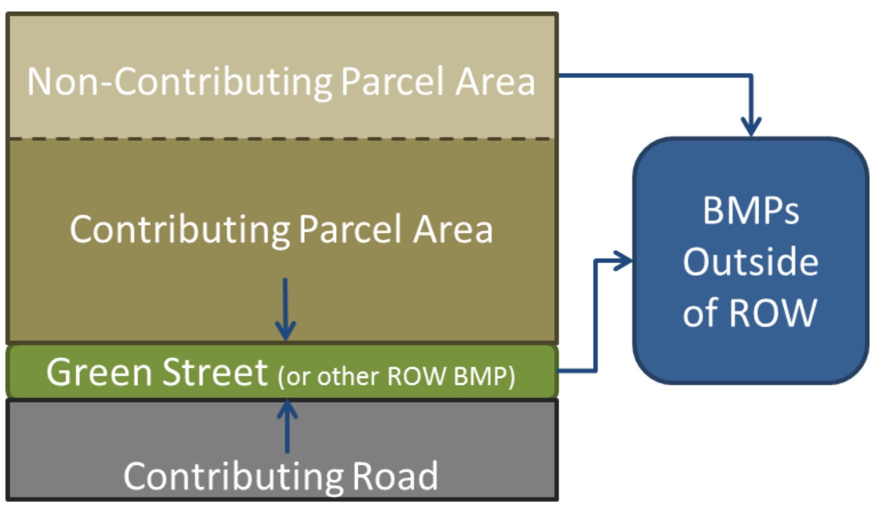


Table A-6
Contributing area percentage by land use

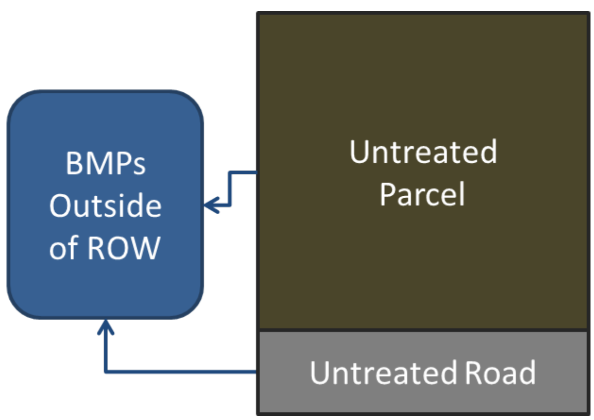
Land Use	Contributing to ROW	Non-contributing to ROW	Percent Impervious
High-density Residential	80%	20%	36%
Multifamily Residential	80%	20%	60%
Commercial	80%	20%	90%
Institutional	80%	20%	72%
Industrial	35%	65%	66%
Other Land Use (Open Space, Vacant, etc.)	0%	100%	n/a

A-3.4.3.4 Untreated Roads Tabulation

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or adjacent to open space or vacant parcels. Untreated road and associated adjacent parcel area that will ultimately drain to other BMPs was tabulated using available GIS data and screening results from Section A.3.4.1 (conceptually illustrated in **Figure A-6**).

Because green streets are implemented in the linear environment of the transportation corridor, it was assumed that the percentage of parcel area draining to green streets would be proportional to the percentage of suitable roads for green streets (as identified in Section A.3.4.1) in each subwatershed. In other words, parcels associated with unsuitable roads were assumed to bypass green street treatment and routed directly to other facilities (these areas are defined herein as *untreated parcels*). The total treated and untreated parcel areas were reconciled with the total areas of each land use (per subwatershed) in the WMMS Model for validation and consistency.

Figure A-6
Schematic Depicting Untreated Parcel and Untreated Road Runoff Routing (arrows denote direction of runoff routing; figure not to scale)



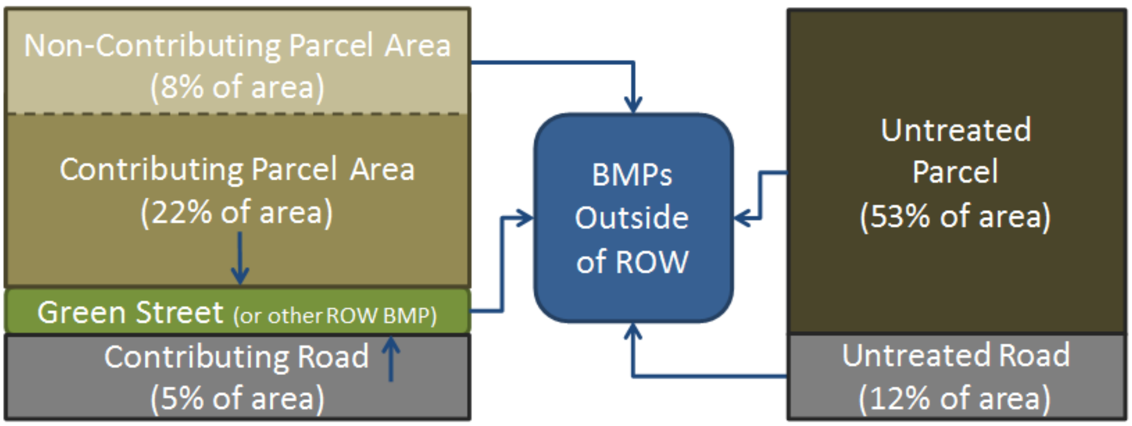
A-3.4.3.5 Summary of Contributing Drainage Areas

Results of the preceding analyses are presented in **Figure A-7**. Areas that were assumed *un*treated by green streets include unsuitable roads and adjacent parcels, portions of suitable parcels that do not drain to the ROW, and predominantly pervious parcels (Open Space, Vacant, etc.), as discussed in preceding subsections; runoff from these untreated areas is assumed routed

directly to regional facilities. Note that contributing areas are not necessarily proportional to contributing runoff due to variation in impervious coverage; runoff routing resulting from the preceding analyses is presented in the following section.

Given more detailed street-by-street engineering analyses, the potential area treated by green streets could be optimized, but the results below represent realistic estimates based on sound engineering judgment and currently available data and resources. Adaptive management strategies could target specific land uses that tend to bypass green street treatment (e.g. runoff, and associated treatment capacity, generated by industrial areas could be addressed through relevant industrial permits or onsite BMPs). Additional discussion on adaptive management strategies is provided in Section A.4.

Figure A-7
Schematic Depicting Contributing Area Routing as Percentages of the Total Watershed Area (arrows denote direction of flow; figure not to scale)



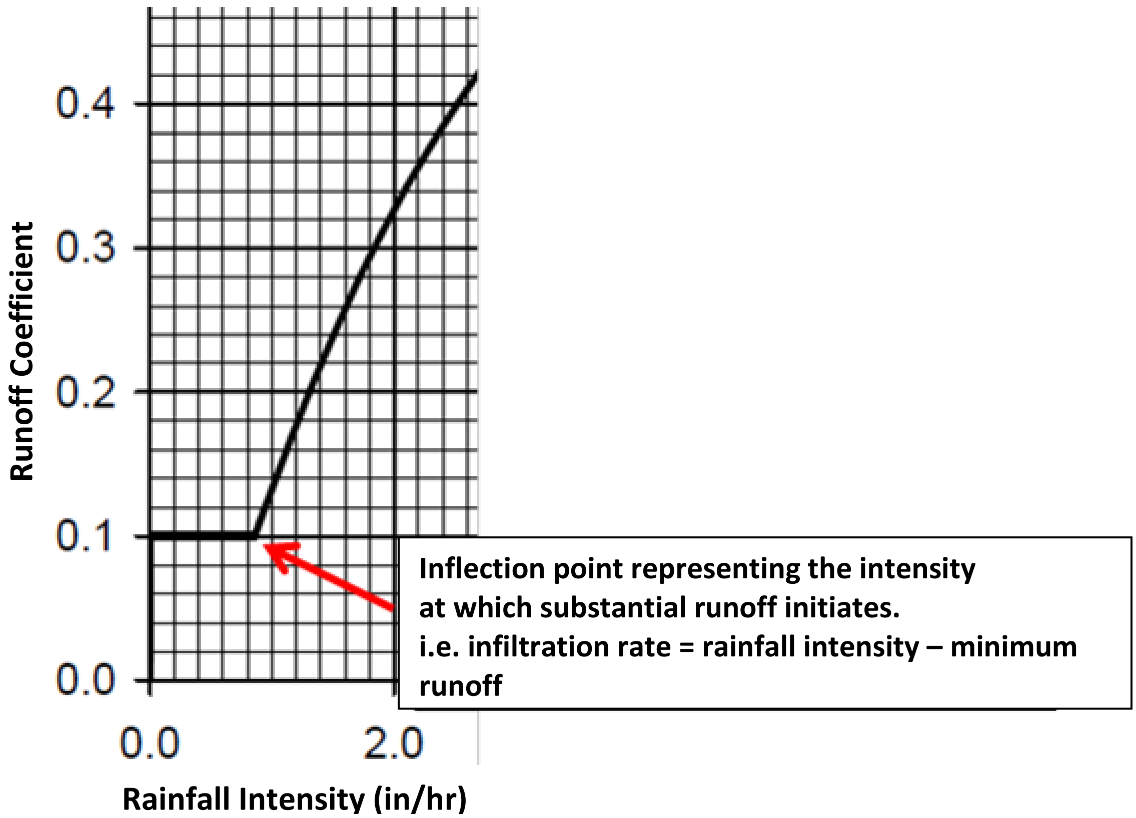
A-3.4.3.6 BMP Infiltration Rates By Subwatershed

The purpose of performing the subwatershed infiltration rate analysis was to assign an average green street BMP infiltration rate to each subwatershed using soils data. Infiltration rates were assigned at the subwatershed level, which is the finest resolution at which the model performs hydrologic and water quality computations.

Soil data coverage provided through the LACDPW categorized soil unit areas into soil types. Runoff coefficient curves reported in the Hydrology Manual were developed by LACDPW for each soil type using double ring infiltrometer tests performed on areas of homogeneous runoff characteristics (LACDPW 2006). LADPW employed a sprinkling-type infiltrometer to perform the tests in each homogeneous area.

Runoff coefficient curves represent the response of the runoff coefficient (defined as the ratio of runoff to rainfall from a land area) to varying rainfall intensities. Each curve displays an inflection point representing the rainfall intensity at which substantial runoff initiates. According to LADPW (2006), each curve was assigned a minimum runoff coefficient of 0.1, "indicating that there is some runoff even at the smallest rainfall intensities." If it is assumed that substantial runoff initiates when the intensity of rainfall is greater than the soil's inherent infiltration rate, then the infiltration rate can be assumed equal to the rainfall intensity at the inflection point (less the assumed minimum runoff).

Figure A-8
Example Determination of Runoff Coefficient Inflection Point for an Arbitrary Soil Type in Appendix C of LACDPW (2006)

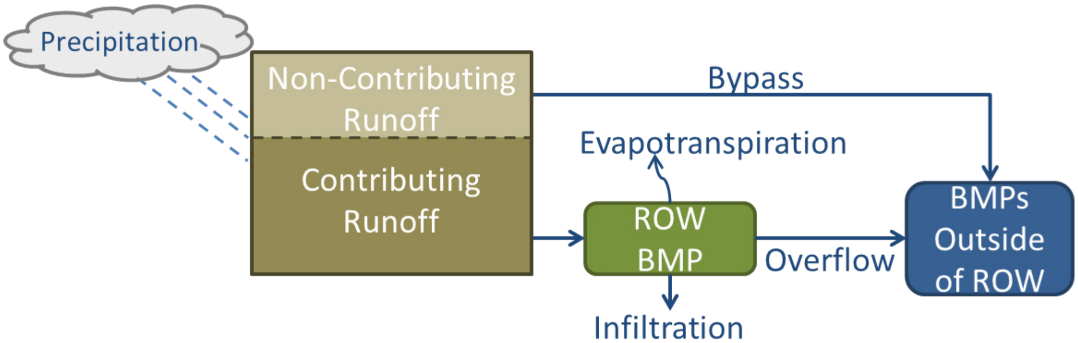


The inflection point, and subsequently calculated infiltration rate, for each unique soil type in the ESGV WMP area were identified using the runoff coefficient curves in Appendix C of the *Hydrology Manual* (LADPW 2006). Subwatershed areas were then intersected with the soil type coverage to calculate an area-weighted infiltration rate. Appendix B shows the distribution of the infiltration rates.

A-3.4.4 Summary of Planning-Level ROW BMP Capacities

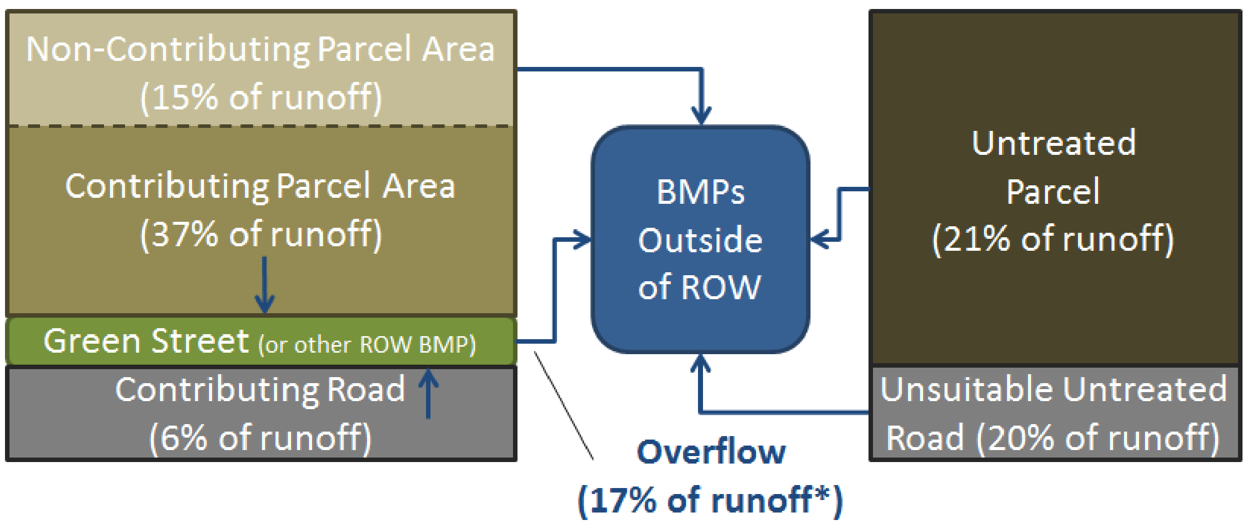
To accurately predict the runoff reduction provided by green streets, BMP models were set up using the BMP tools in WMMS. The contributing drainage area properties, BMP configuration, and infiltration rates for each subwatershed as described in the previous section were used as input into the analysis. The BMP tool in WMMS represents the hydrologic conditions of each subwatershed from runoff to BMP performance to bypass. It is best understood by following the runoff flow path through a typical watershed. Each land use is assigned a runoff time series which is routed to either a BMP or as bypass. The runoff routed to the BMP serves as the inflow and fills up the available ponding depth and the soil media void space. While the storage area fills, the BMP outflows through infiltration and evapotranspiration. Once the storage area is full, the water overflows, which is then routed downstream to another BMP. **Figure A-9** shows the simple BMP runoff flow paths.

Figure A-9
Green Streets Runoff Routing Model Schematic (arrows denote water pathways)



Based on the routing configuration findings outlined in A.3.4.2 and the BMP modeling analysis, up to 43 percent of the watershed runoff drains to the identified green street retrofit locations (with 26 percent being captured by the BMPs and 17 percent overflowing downstream). The remainder of the watershed runoff (57 percent of the total) must be managed through other volume reduction strategies.

Figure A-10
Summary of Runoff Routing by Area (arrows denote direction of runoff routing; figure not to scale)



*Note: Overflow from green streets is the difference between the contributing parcel and roadway runoff less the green street volume reduction of 26%.

A-3.5 NON-ROW BMP CAPACITY ASSESSMENT

Excess volume that does not drain to the ROW or is unable to be captured by ROW BMPs (due to overflowing) must be retained through non-ROW BMPs. These non-ROW BMPs potentially include the following:

- Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, etc.)
- Retention of runoff from new and redeveloped private parcels subject to LID ordinances.

- Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
- Regional BMPs to capture and retain runoff from large upstream areas prior to discharge to receiving waters.

The following non-ROW BMP capacity assessment was performed as a planning-level exercise to help guide strategies for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities can be used as a baseline goal for meeting numeric targets, but adaptive management should be used to refine these strategies over time.

A-3.5.1 LID on Public Parcels

Retrofitting public parcels with LID can be an efficient strategy for reducing stormwater runoff. This method allows municipalities the flexibility to prioritize and schedule stormwater projects to coincide with improvements that are already on the books (such as scheduled parking lot resurfacing, utility work, and public park improvements). Implementing LID on public parcels also allows municipalities the freedom to construct, inspect, and maintain BMPs without the need to purchase private property or to create stormwater easements.

The spatial extent of public parcels in each subwatershed was identified by selecting all parcels labeled as public by their assessors identification number (AIN). A total of 7,320 acres of public land was identified during this process (35% of the total WMP area). Runoff generated by each specific public parcel during the 85th-percentile, 24-hour storm was then extracted from the WMMS model output, and the runoff from any Caltrans or permitted non-MS4 land that overlapped public parcels was subtracted to avoid double-counting. The remaining runoff volume represented the maximum potential design storm runoff to be retained on public parcels.

LID retrofits are not feasible in all locations due to steep slopes, soil contamination hazards, and other constrains. The total runoff to be retained on public parcels was therefore discounted by 30% in order to provide a more realistic goal; this estimate was made in the lack of more detailed data, based on past LID screening exercises performed in Los Angeles County. The discount factor should be refined as actual public project sites are screened and prioritized.

A-3.5.2 LID on Private Parcels from (Re)Development

The Permit requires initiation of LID ordinances that require implementation of LID BMPs during new development and redevelopment. LID practices constructed during *new* development will likely have a net zero impact on runoff volumes because predevelopment conditions will theoretically be restored to the site via construction of new BMPs; however, LID incorporated into *re*development projects will reduce existing runoff volumes discharged by the MS4 because existing impervious surfaces will be retrofit with BMPs.

To estimate the impact of redevelopment on meeting the design storm runoff target, redevelopment data were submitted by the jurisdictions. Typical parcel sizes and redevelopment rates (in terms of parcels per year) were evaluated based on at least two years of submitted data to estimate the total private parcel area to be redeveloped (and subsequently retrofit with BMPs) per year. Public parcels were not considered in this analysis because they were previously considered in Section A.3.5.1.

The redevelopment rates were applied regionally to multi-family residential, commercial, and institutional land use areas throughout each subwatershed, and it was assumed that all runoff from the redeveloped area would be retained at the end of the compliance schedule (2026). High-density single-family land uses were not considered because the area threshold that triggers a redevelopment project (5,000 square feet of new/replaced impervious area) would not commonly be surpassed on single family parcels. Industrial land uses were also not considered because these analyses could potentially overlap with areas already regulated under non-MS4 stormwater permits.

Table A-7
Estimated redevelopment rates reported by jurisdiction

Jurisdiction	Typical Redeveloped Parcel Size (ac)	Mean Land Area Redevelopment Rate (ac/year)
Claremont	1.25	8.125
La Verne	2	2
Pomona	8	90
San Dimas	4.8	4.176

A-3.5.3 Downspout Disconnection Program

Impervious surfaces are considered *directly connected* when runoff is routed to the storm drain system without providing opportunities for infiltration. The rate and volume of runoff entering the MS4 can be reduced by disconnecting impervious surfaces, (such as rooftops with downspouts plumbed to the gutter or storm drain) such that runoff is afforded the chance to be stored, infiltrated, and/or evapotranspired.

To simulate a downspout disconnection program, it was assumed that disconnections would be performed on high-density single-family residential, multi-family residential, and institutional land uses because structures in these land uses tend to be surrounded by open space such as lawns, open space, and playgrounds (vis-à-vis commercial and industrial land uses that tend to have pavement and sidewalks abutting the buildings). Next, it was assumed that 10%, 50%, and 50% of high-density single-family residential, multi-family residential, and institutional land uses are directly connected, respectively. This was a planning-level estimate that was made in the lack of more detailed data and is considered conservative considering many currently disconnected downspouts are in fact routed to driveways, curbside drains, and compacted urban lawns.

Downspout disconnection was simulated by modeling the unit hydrology of downspout disconnection for each combination of considered land use and underlying soil infiltration rate. Only private parcels were considered for this analysis because runoff reduction on public parcels was already considered in Section A.3.5.1. Typical dimensions and drainage area ratios of rooftop to open space for each considered land use were defined using aerial orthoimagery and it was assumed that runoff exiting a disconnected downspout would disperse at a 45˚-angle until encountering the parcel boundary. Depressional storage for open space to which runoff was routed was assumed to be 0.1 inches per ASCE (1992). The unit hydrologic response of

disconnected parcels was then extrapolated for each private parcel - land use – infiltration rate combination within each subwatershed.

As mentioned above, it is important to note that the effective directly connected area eligible for a disconnection program may be much larger than the considered area because many "disconnected" downspouts are routed to driveways or compacted urban lawns. Downspout disconnection programs should offer incentives for property owners who truly disconnect their rooftop by incorporating stormwater harvesting and retention practices such as rain barrels, rain gardens, and/or soil amendments.

A-3.5.4 Summary of Planning-Level Non-ROW BMP Capacities

The following table (**Table A-8**) summarizes the percent reduction in design storm runoff (excluding non-MS4 runoff) that could potentially be achieved by BMPs outside of the ROW.

Table A-8
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Potential Reduction in MS4 Design Storm Runoff From Non-ROW BMPs, ac-ft (percentage of MS4 treatment capacity)			
	LID on Public Parcels	LID on Private Parcels	Downspout Disconnection	Total per Jurisdiction
Claremont	5.05 (6%)	4.31 (5%)	3.30 (4%)	12.66 (15%)
La Verne	6.91 (5%)	1.08 (1%)	5.35 (4%)	13.34 (11%)
Pomona	17.41 (8%)	29.06 (14%)	6.71 (3%)	53.18 (26%)
San Dimas	8.44 (7%)	1.78 (1%)	4.50 (4%)	14.72 (12%)
Total per BMP (ESGV-wide)	**37.82 (7%)**	**36.23 (7%)**	**19.86 (4%)**	**Grand Total = 93.91 (17%)**

A-4 ADAPTIVE MANAGEMENT STRATEGY FOR ACHIEVING BMP CAPACITIES

Expansive networks of BMPs that will be required to retain the design storm volumes for each jurisdiction. As BMPs are implemented, the experience gained can and should be used to improve the reduction strategy approach and associated analyses. This section summarizes potential methods to either [1] increase the effectiveness/capacity of ROW BMPs or [2] reduce the total runoff that is not retained by ROW BMPs.

A-4.1 OVERFLOW FROM ROW BMPS

The RAA highlighted only bioretention as a BMP option for green streets. Permeable pavement could also be implemented within the ROW to increase the storage capacity and reduce the BMP overflow. Preliminary findings indicate that inclusion of permeable pavement with all modeled green street opportunities could result in full retention of the design storm runoff from the contributing areas, which would eliminate green street overflows and increase the total green street reduction from 37 percent to 52 percent.

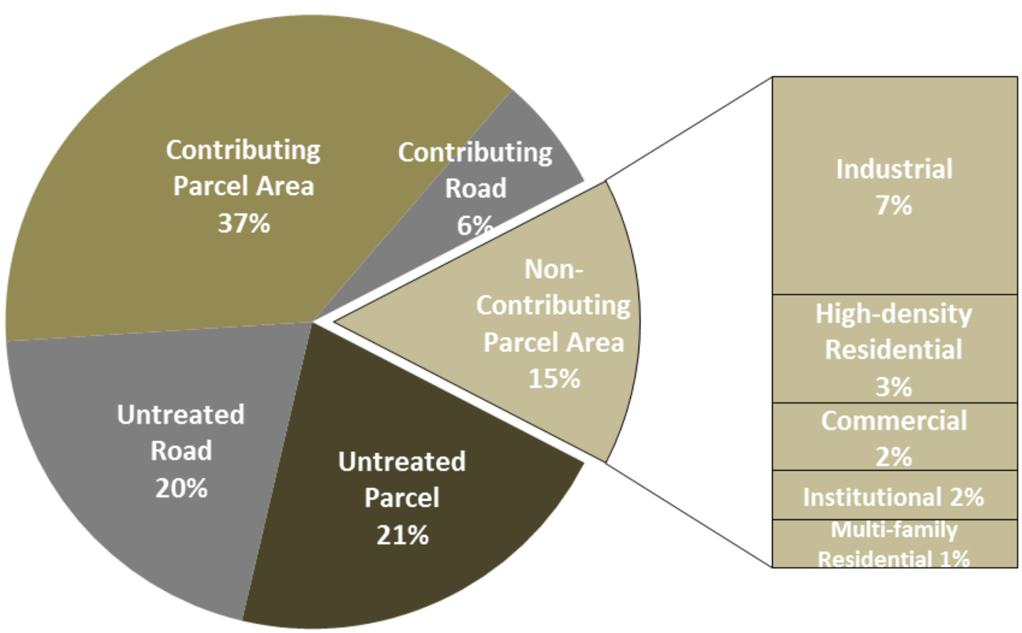
In the course of the RAA, the available area for ROW BMP implementation was limited to 30 percent of the road length (see Section A.3.4.3). This assumption limits the area for implementation and results in overflow when green streets reach their maximum capacity. To limit the overflow, the maximum extent of ROW BMP implementation along streets could be increased; however, this percentage should only be adjusted on a street-by-street basis upon more detailed investigation of the watershed.

A-4.2 PARCEL AREAS THAT DO NOT DRAIN TO ROW WHERE ROW BMPS ARE SUITABLE

As described in Section A.3.4.3, many parcels include areas that do not contribute runoff to adjacent streets that are candidates for green street retrofits. Based on the current assumptions, approximately 15 percent of the excess runoff comes from the non-contributing parcel area (**Figure A-11**). To decrease this excess runoff, the assumed contributing percentages can be adjusted based on a deeper understanding of the watershed and local observations.

Typical industrial and large commercial parcels include on-site collection systems that are directly connected to the storm sewer system and thus bypass any opportunity for treatment through green streets. Programs may be possible to promote on-site capture of commercial/industrial stormwater runoff that would reduce the overall runoff and decrease the total volume required for treatment with regional BMPs. For example, a low-impact development retrofit program that targeted the directly connected areas of industrial parcels might be one way to address the 7 percent of untreated runoff generated from this land use (**Figure A-11**).

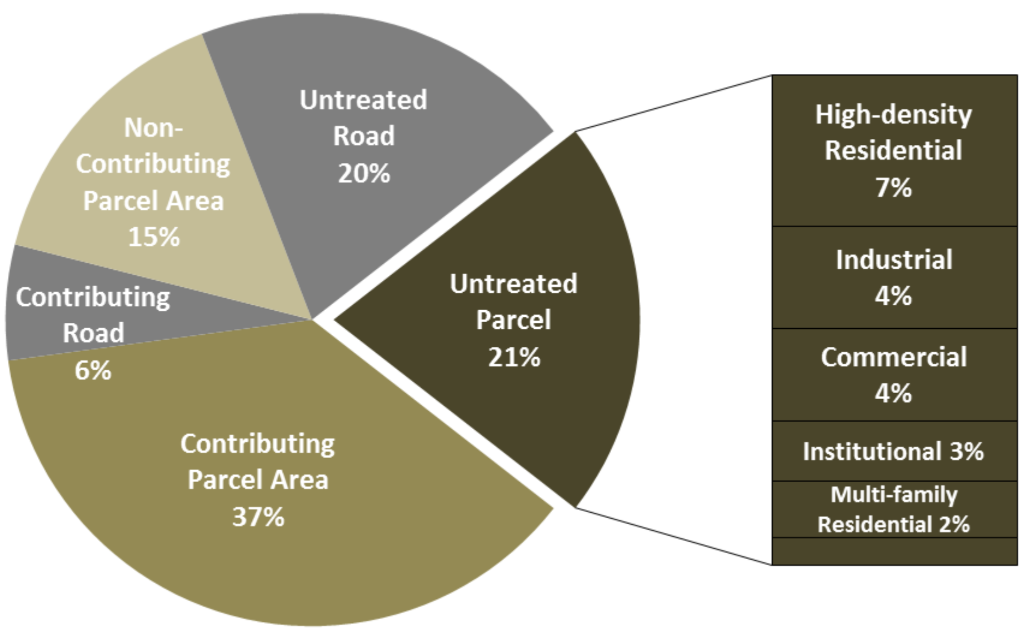
Figure A-11
Runoff Distribution and Routing Emphasizing Runoff from Areas that do not Drain to the ROW



A-4.3 UNTREATED PARCELS

The majority of land area (53 percent) analyzed in this study were classified as "untreated parcels" (**Figure A-7**). Untreated parcels include open space and parcels that are adjacent to roads deemed unsuitable for green street retrofit (see Section A.3.4.3). While open space comprises much of the land in this area, the runoff generated from open space parcels during the design storm scenario is small compared to urbanized areas. The majority of the untreated runoff is generated from the developed parcels that drain to roads deemed unsuitable for green street retrofits (**Figure A-12**). Since this area contributes 21 percent of all runoff for the design storm, it is likely that non-ROW capture strategies will need to be considered. Similar to the example provided under Non-Draining Parcel Area subheading above, low-impact development retrofit incentive programs could be explored as non-ROW BMPs (however, it should be noted that low-impact development may be difficult in some of these areas because unsuitable roads were often eliminated due to high slopes). Other non-ROW BMPs that may also be considered includes regional BMPs.

Figure A-12
Runoff Distribution and Routing Emphasizing Runoff from Untreated Parcels



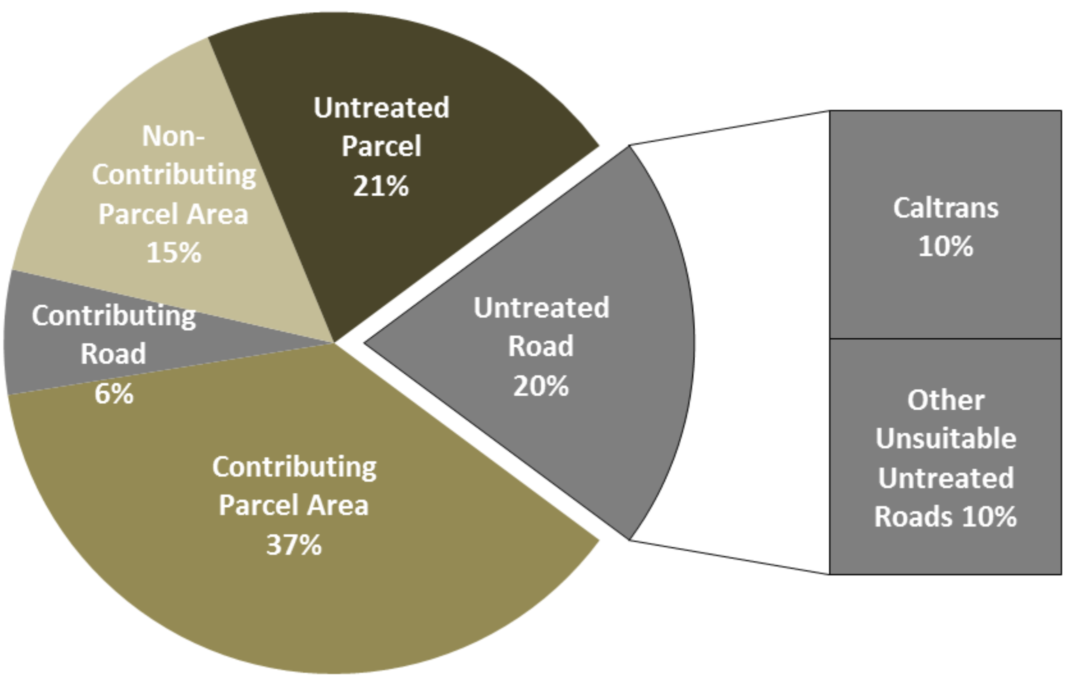
A-4.4 UNTREATED ROADS

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or open space or vacant parcels adjacent. The majority of the roads identified were freeways and highways. The freeways and highways contribute 10 percent of the total runoff to the storm sewer system (**Figure A-13**). As discussed in Section A.3, the excess runoff

from freeways and highways fall under the jurisdiction of Caltrans and are not under the charge of the MS4.

Other unsuitable, untreatable roads contribute 10 percent of the total runoff. Other unsuitable, untreatable roads with appropriate slopes can implement green streets to solely treat *roadway* runoff in situations where the adjacent parcels are expected to contribute insignificant runoff or where runoff is conveyed away from the ROW. For instance, green streets sited along predominantly pervious parcels (those classified as Open Space, Vacant, etc.) would primarily capture and treat runoff only from the road surface. This procedure can identify the additional potential road drainage area that can be treated through ROW BMPs.

Figure A-13
Runoff Distribution and Routing Emphasizing Runoff from Untreated Roads



Appendix B

Additional Details and Supporting Information on BMP Modeling

Figure B-1
Potential High Groundwater Areas

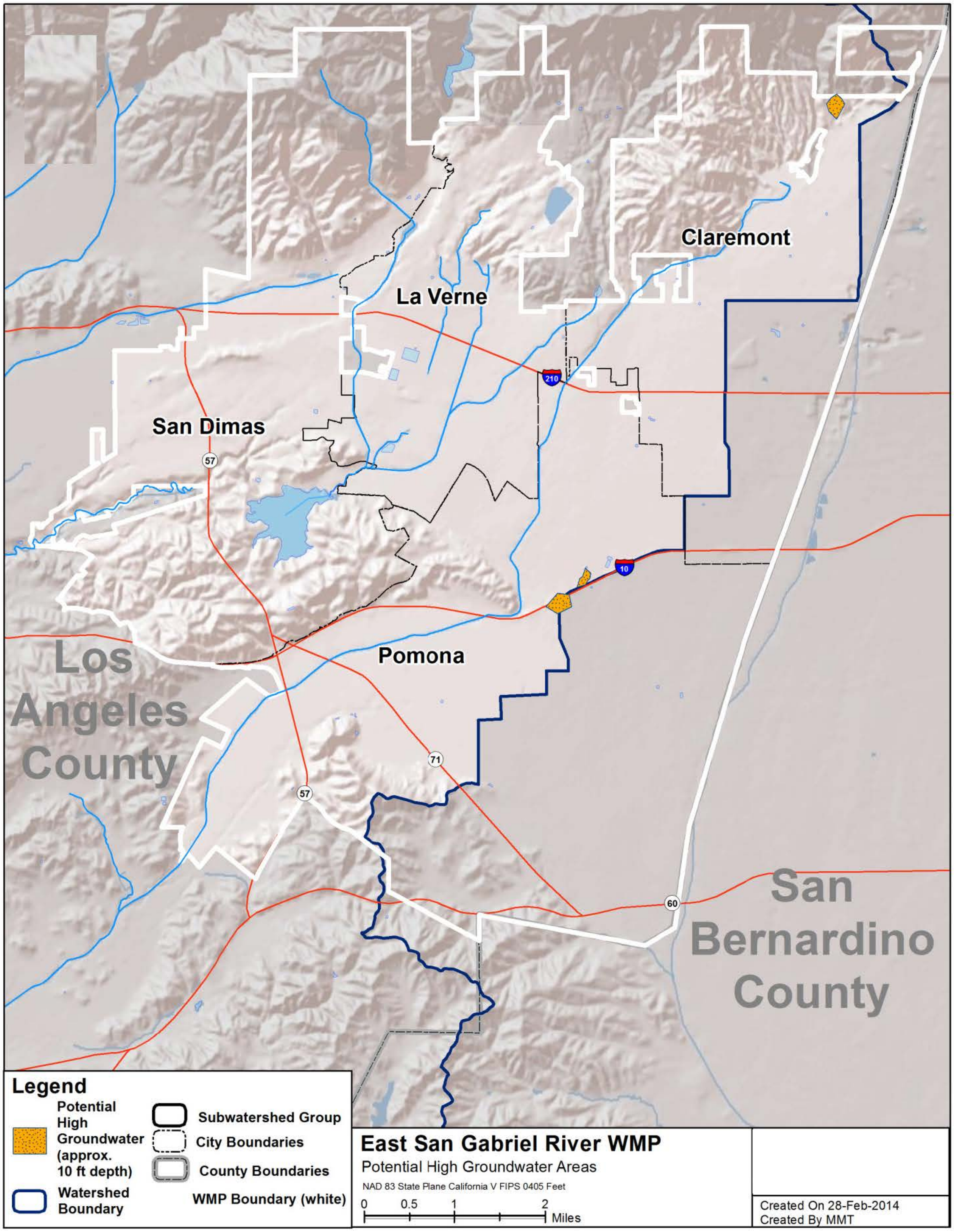
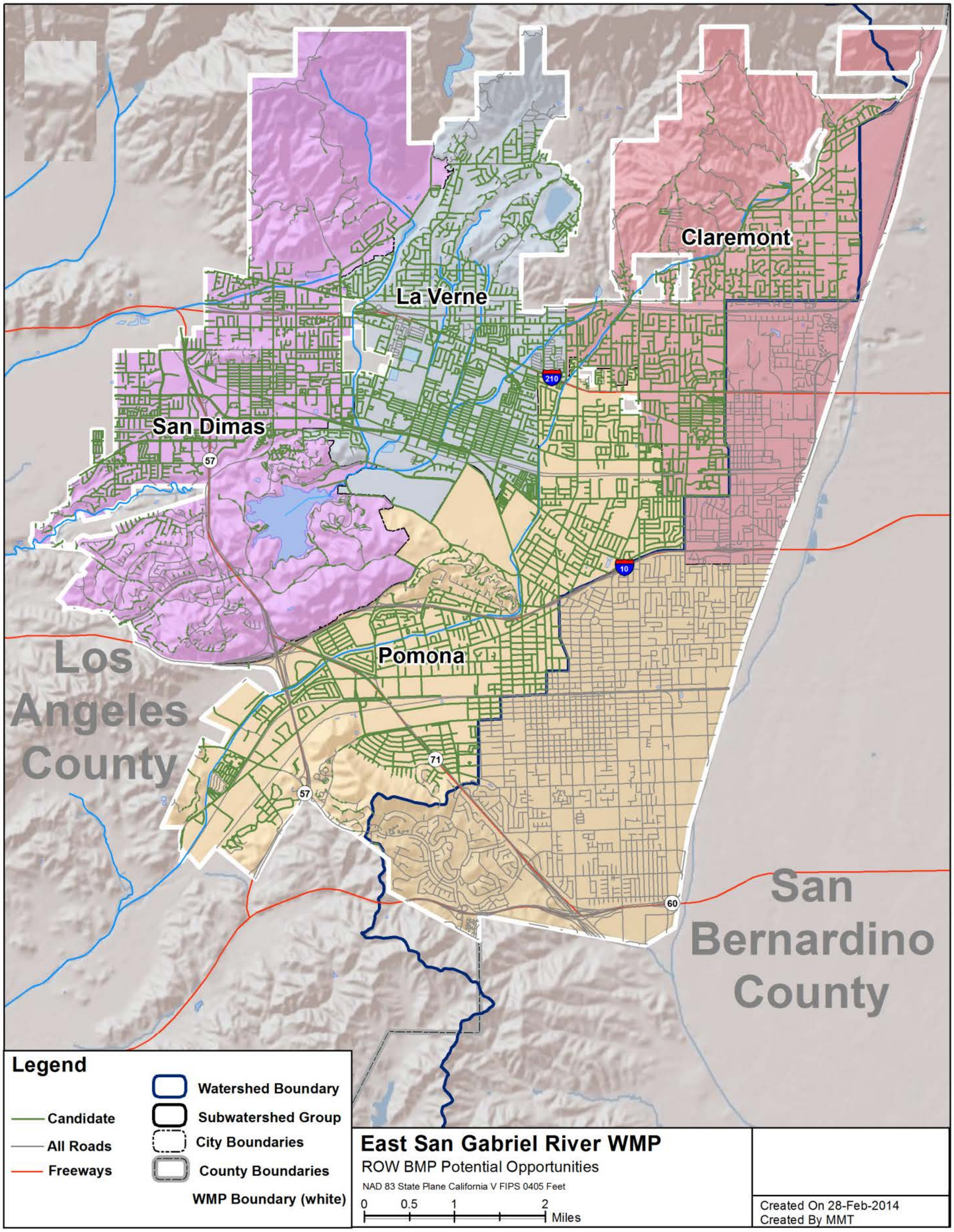


Figure B-2
ROW BMP Potential Opportunities



RB-AR3458

Figure B-3
ROW BMP Potential Opportunities – City of Claremont

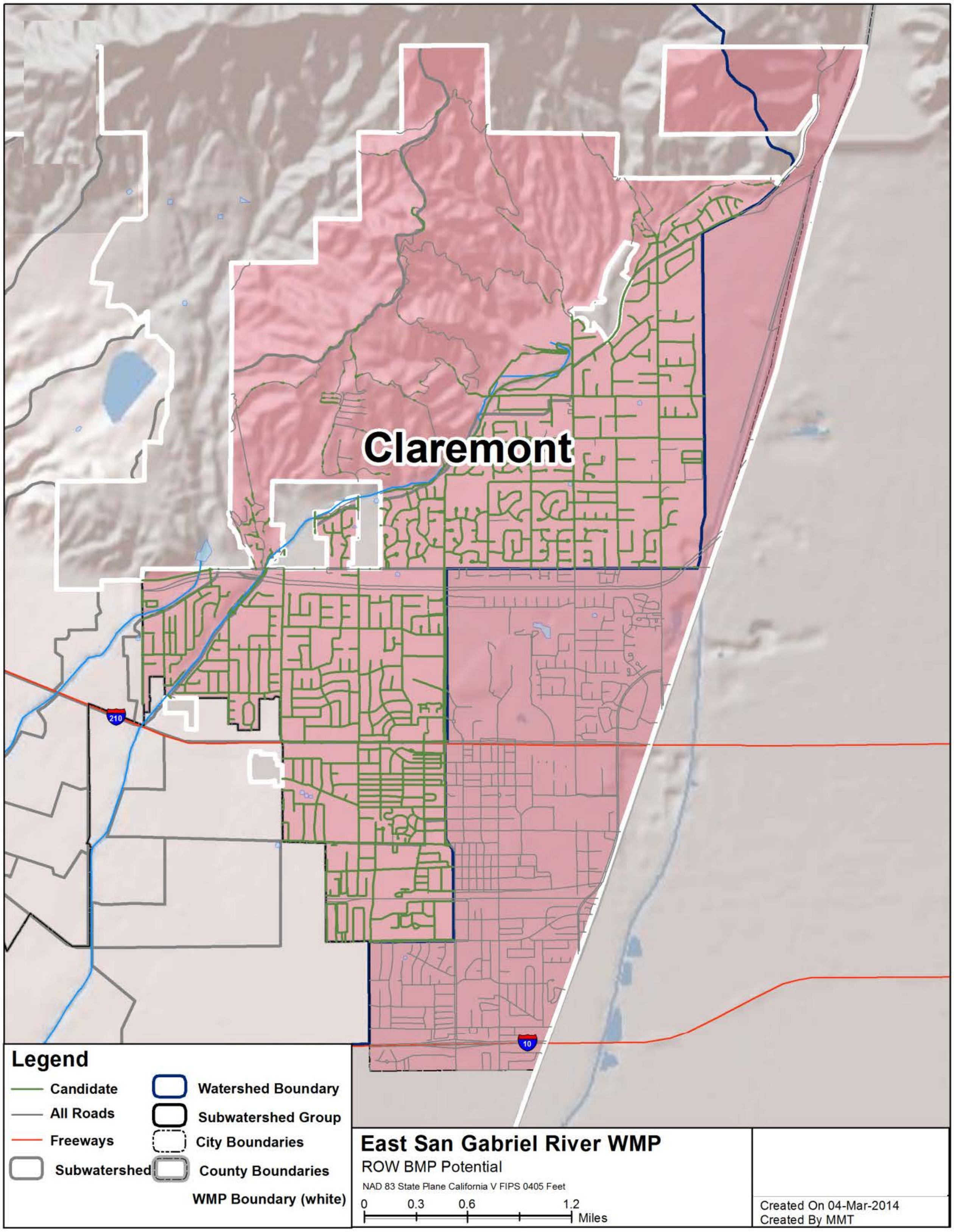


Figure B-4
ROW BMP Potential Opportunities – City of La Verne

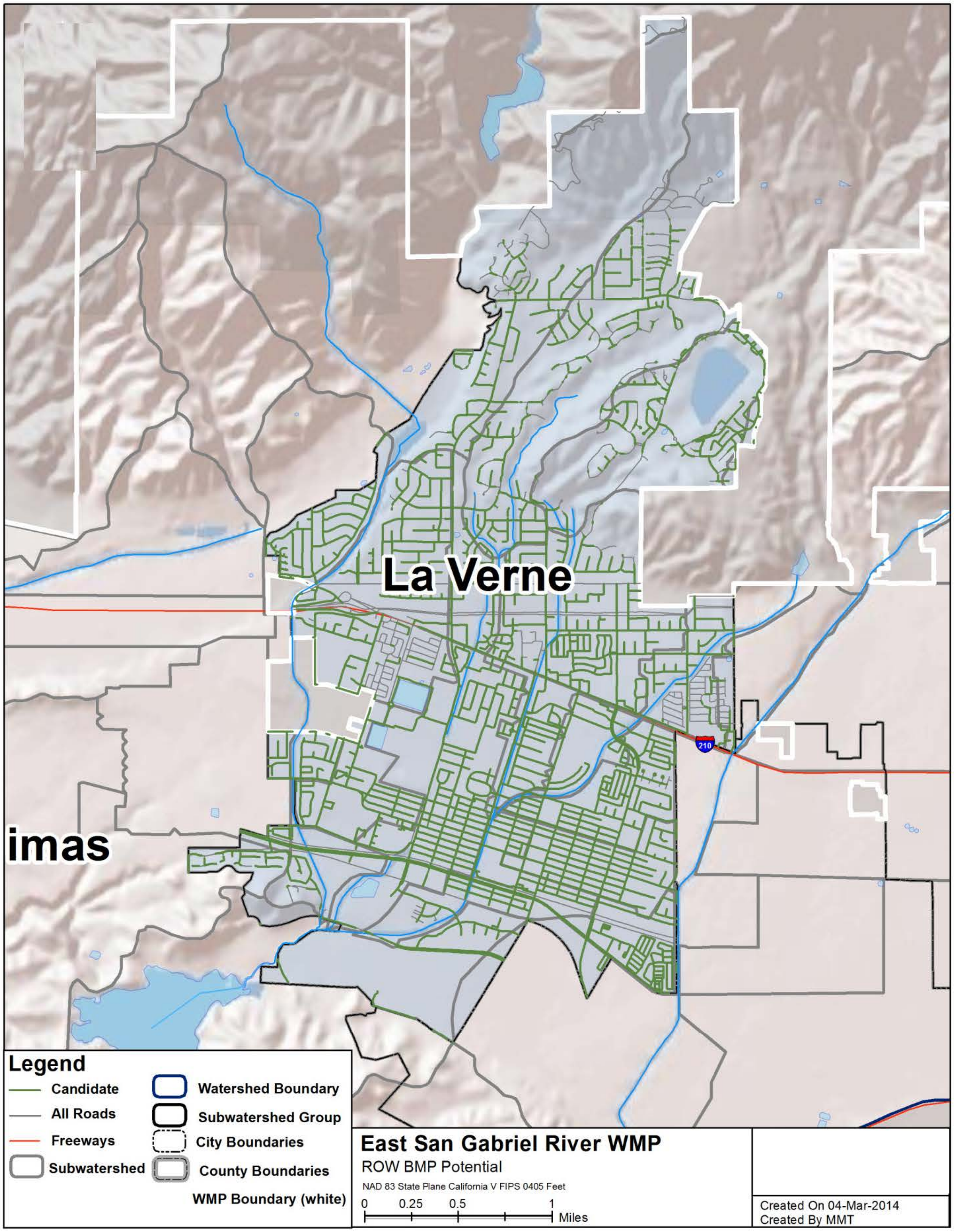


Figure B-5
ROW BMP Potential Opportunities – City of Pomona

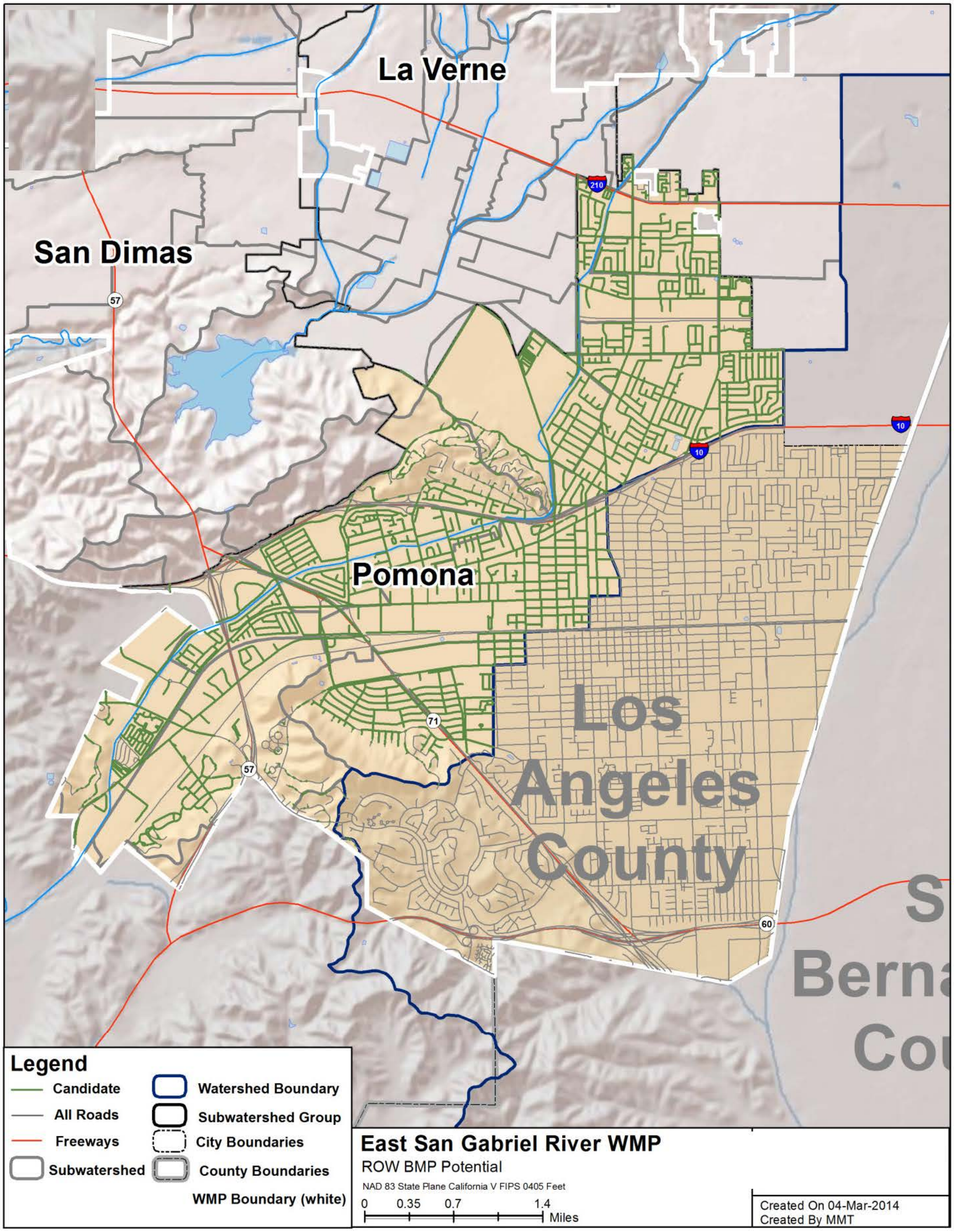


Figure B-6
ROW BMP Potential Opportunities – City of San Dimas

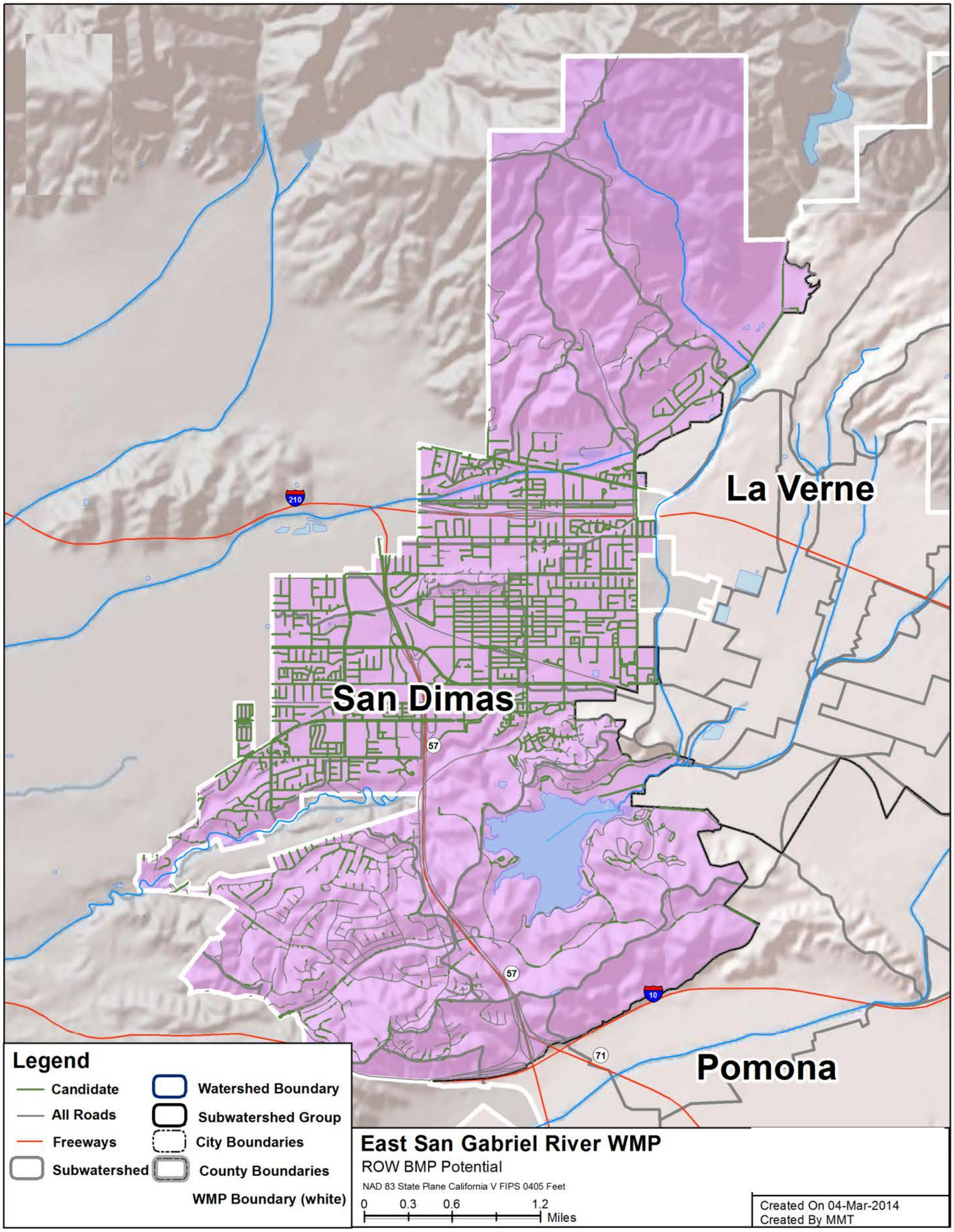


Figure B-7
Subwatershed Infiltration Rates

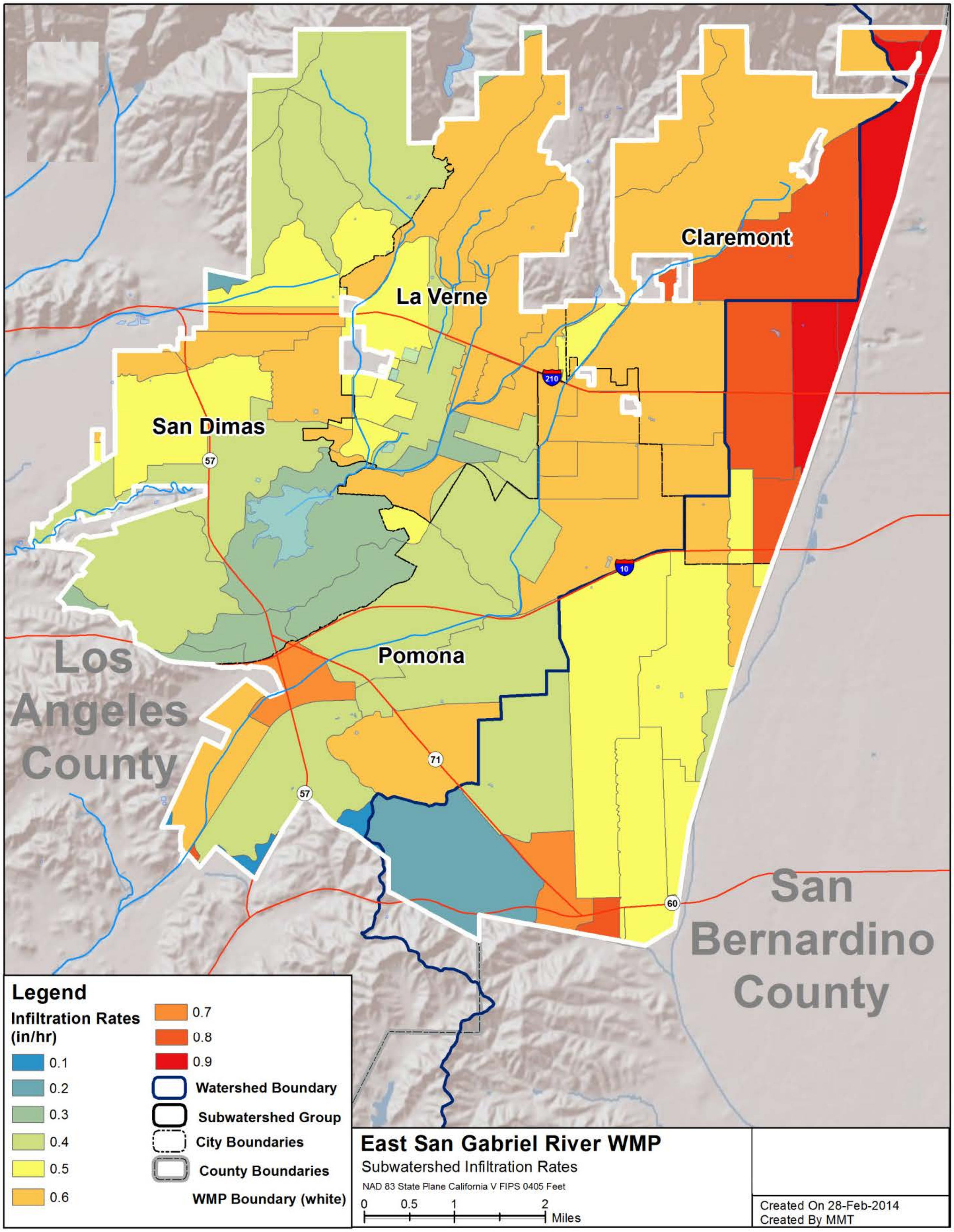


Table B-1
Jurisdictional Ranking Tables for Scheduling, Prioritizing & Implementing BMPs

Claremont

Subwatershed	Rank	Tier
175225	1	1
175221	2	1
175222	3	2
175405	4	3
175223	5	3
175216	6	3
175408	7	3
175224	8	N/A
175409	9	N/A

La Verne

Subwatershed	Rank	Tier
435397	1	1
435398	2	1
435223	3	1
435218	4	1
435221	5	1
435407	6	1
435401	7	1
435411	8	1
435220	9	1
435402	10	1
435400	11	1
435217	12	2
435409	13	2
435408	14	2
435405	15	2
435410	16	2
435404	17	3
435406	18	3
435403	19	3
435412	20	3
435399	21	3
435468	22	3
435413	23	N/A
435415	24	N/A

Pomona

Subwatershed	Rank	Tier
635208	1	1
635210	2	1
635213	3	1
635212	4	1
635223	5	1
635219	6	1
635215	7	1
635222	8	2
635217	9	2
635209	10	3
635214	11	3
635216	12	3
635220	13	3
635221	14	3
635403	15	3
635218	16	3
635408	17	3
635211	18	N/A
635207	19	N/A
635399	20	N/A

San Dimas

Subwatershed	Rank	Tier
695400	1	1
695387	2	1
695481	3	1
695468	4	1
695464	5	1
695397	6	1
695398	7	1
695395	8	1
695394	9	2
695390	10	2
695410	11	2
695411	12	2
695209	13	2
695396	14	2
695465	15	3
695466	16	3
695484	17	N/A
695393	18	N/A
695482	19	N/A
695208	20	N/A
695489	21	N/A
695412	22	N/A
695210	23	N/A
695467	24	N/A
695399	25	N/A

Figure B-8
Subwatershed Implementation Prioritization – City of Claremont

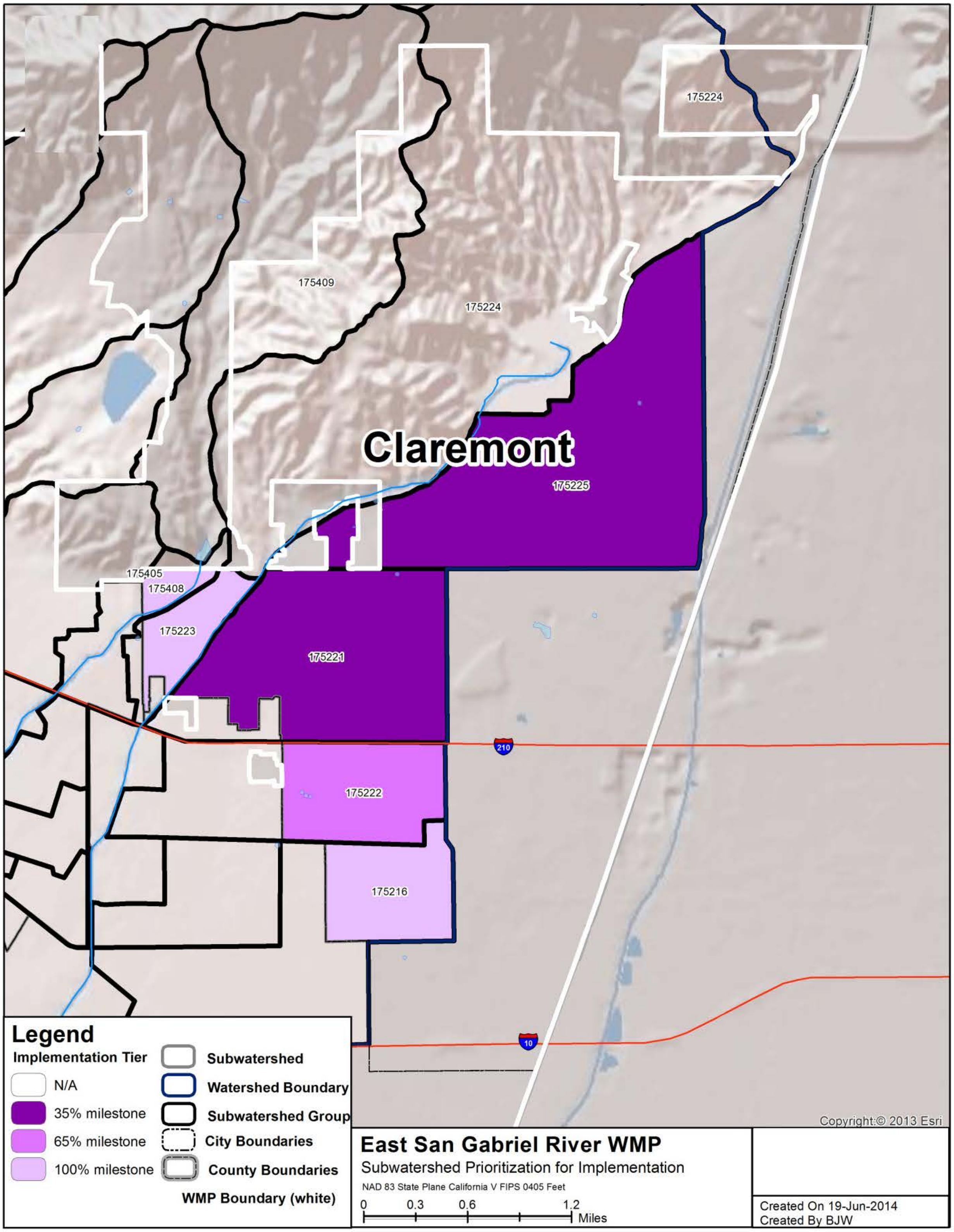


Figure B-9
Subwatershed Implementation Prioritization – City of La Verne

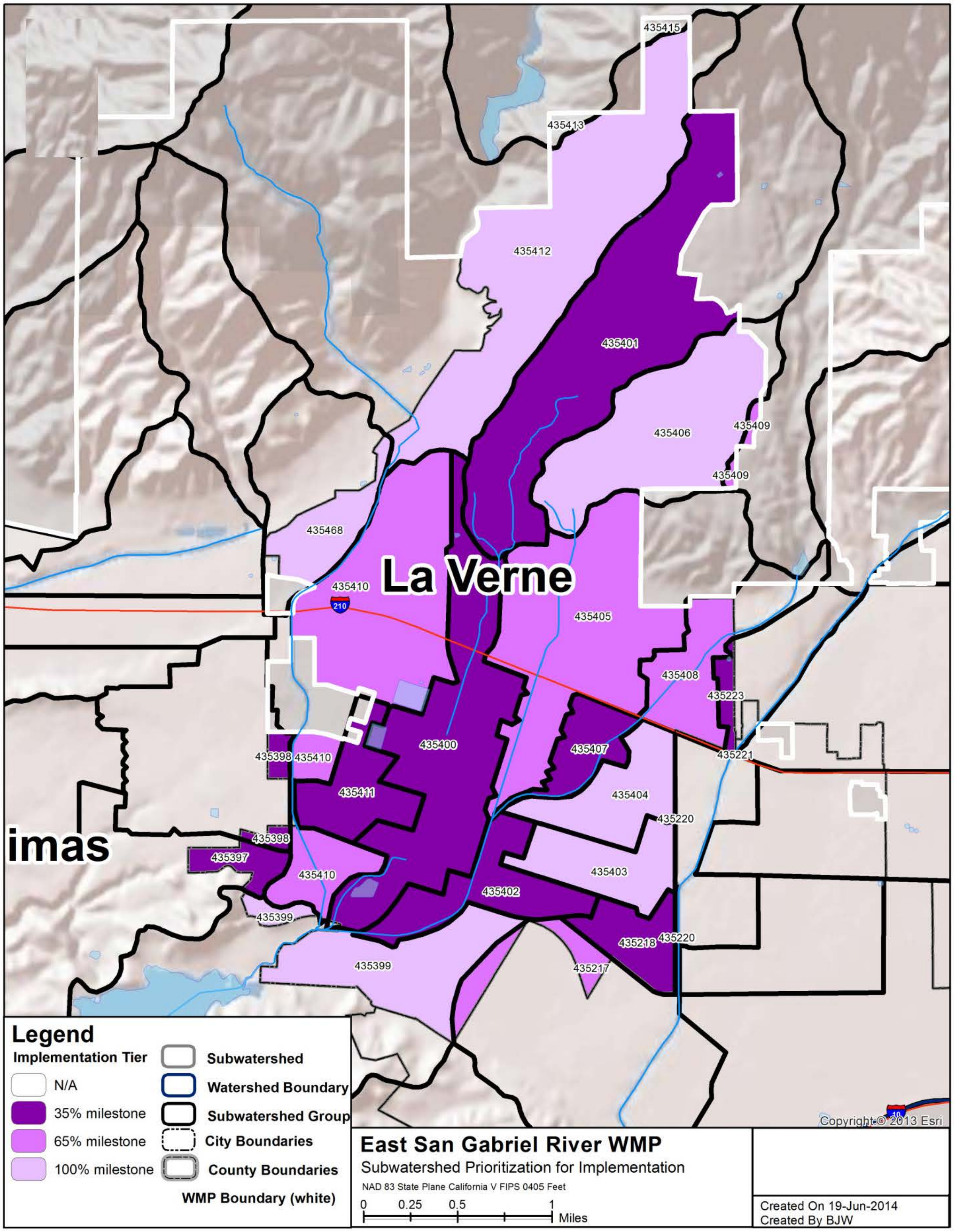


Figure B-10
Subwatershed Implementation Prioritization – City of Pomona

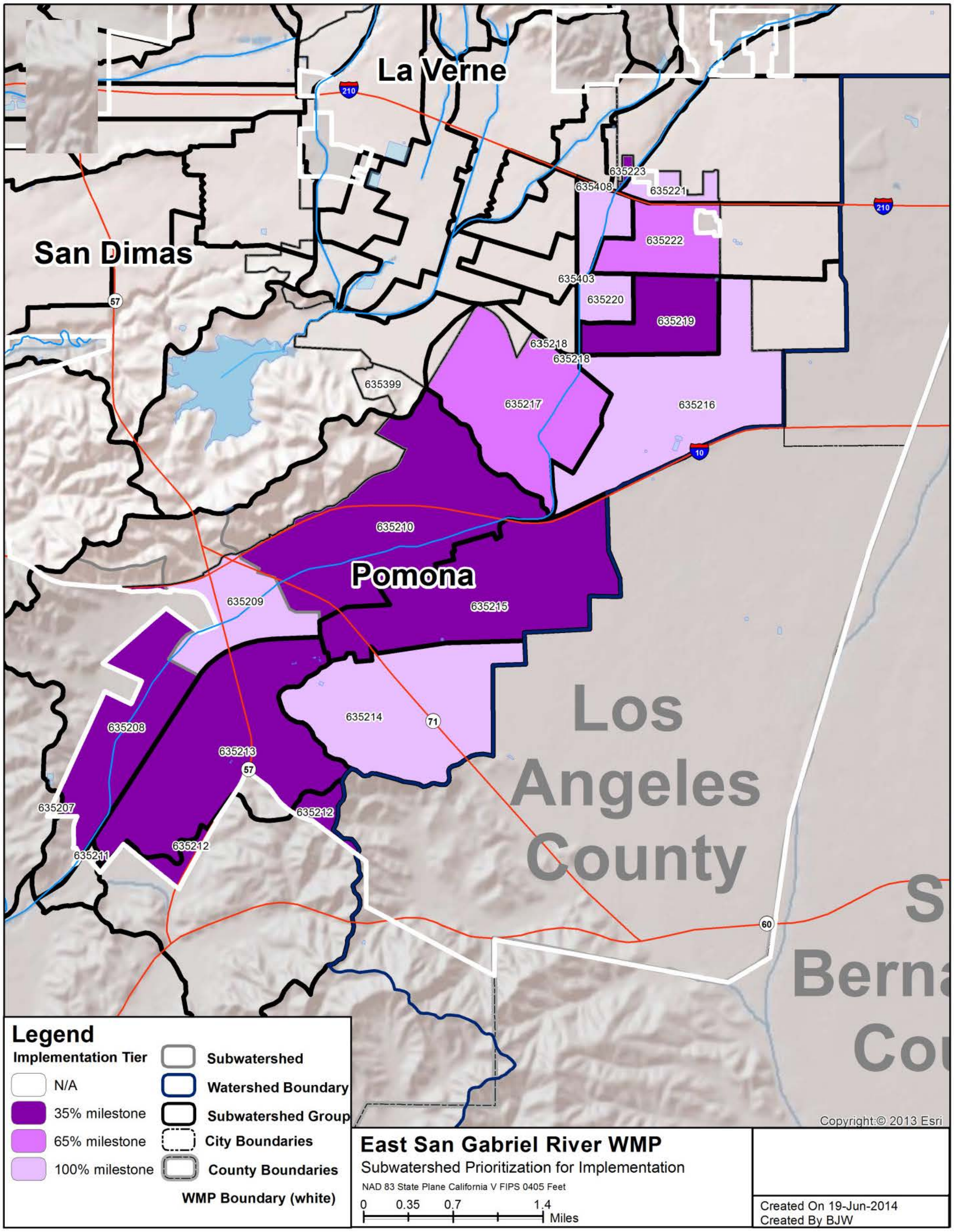
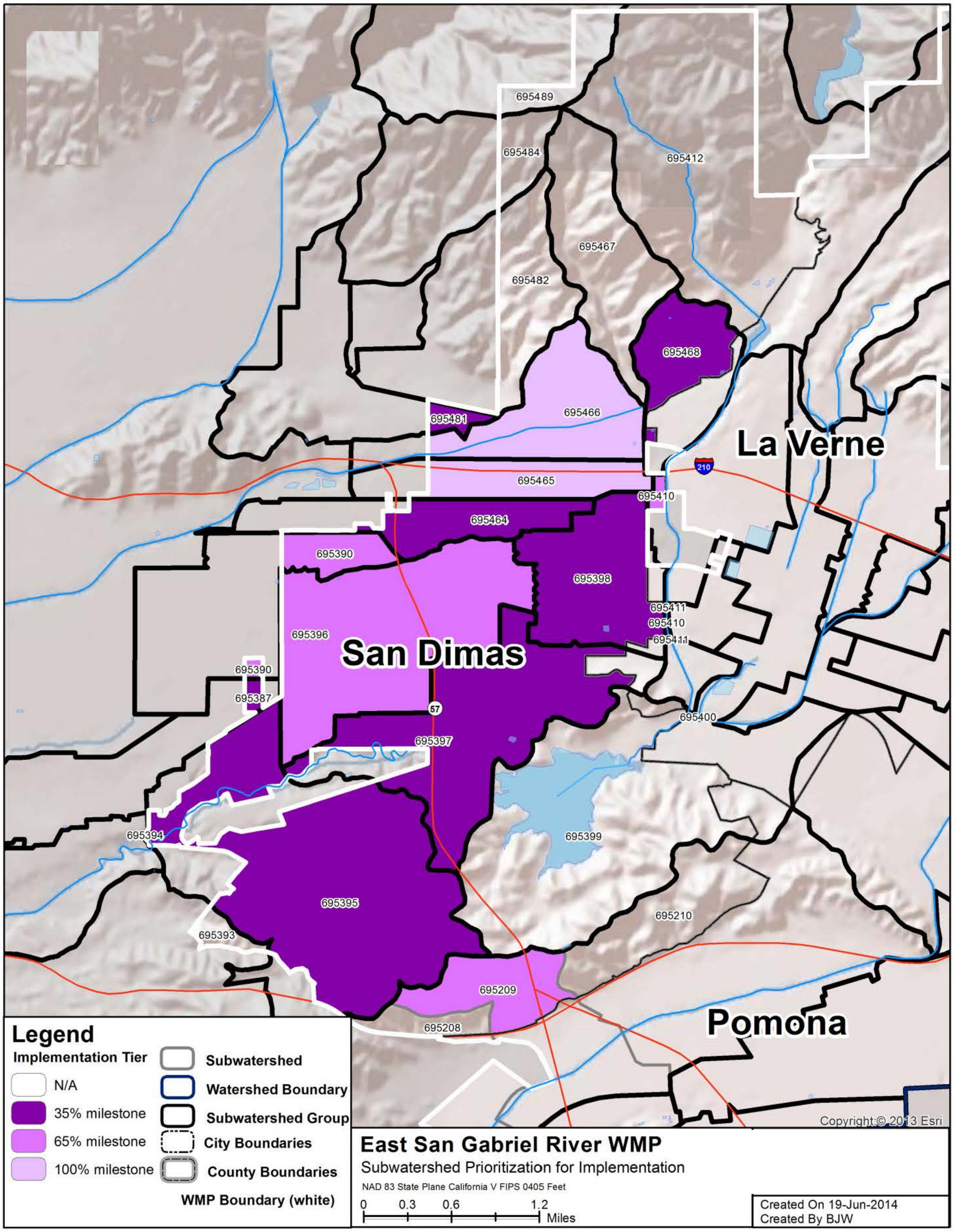


Figure B-11
Subwatershed Implementation Prioritization – City of San Dimas



Appendix C

Green Streets Policies and LID Ordinances for the East San Gabriel Valley Watershed Management Group Members

RESOLUTION NO. 2014-53

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY

WHEREAS, the new Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region, on November 8, 2012; and

WHEREAS, at the July 23, 2013 meeting, the City Council directed staff to move forward in the preparation of a Group Watershed Management Plan with the cities of Pomona, La Verne and San Dimas; and

WHEREAS, Municipalities electing to prepare a Watershed Management Plan (WMP) or an Enhanced Watershed Management Plan (EWMP) under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors; and

WHEREAS, Green Streets are enhancements to street and road projects to improve the quality of storm water and reduce urban runoff through the implementation of infiltration measures such as bioretention, infiltration trenches and dry wells; bio-treatment/infiltration measures such as flow-through planters and vegetated swales; treatment Best Management Practices (BMPs) such as catch basin filters and screens; and implementing and maintaining xeriscaped parkways and tree lined streets; and

WHEREAS, Green Streets are also an amenity that provide many benefits including groundwater replenishment, creation of attractive streetscapes, and pedestrian and bicycle accessibility.

NOW THEREFORE, THE CLAREMONT CITY COUNCIL DOES HEREBY RESOLVE:

SECTION 1. That the City Council of the City of Claremont, California, hereby directs the Director of Community Development and the Director of Community Services to implement Green Streets for transportation corridors as described in the City of Claremont Green Streets Policy, attached hereto.

SECTION 2. Routine maintenance of roadways and activities including, but not limited to, (a) application of seal coats, slurry seals, grind and overlays; and (b) reconstruction to maintain original line and grade, are excluded from the Green Streets Policy.

SECTION 3. At its regular meeting of June 24, 2014, the City Council determined that the adoption of the Green Streets Policy is necessary to support compliance with the new MS4 Permit.

SECTION 4. The Community Development Department and the Community Service Department shall incorporate aspects of Green Streets into annual staff trainings to help ensure proper implementation of such measures for transportation corridors.

SECTION 5. The City Council finds that the adoption of the Green Streets Policy is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Green Streets Policy since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the Green Streets Policy is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the Green Streets Policy would result in future unknown construction activities that would be exempt as replacement or reconstruction projects pursuant to State CEQA Guidelines section 15302. City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Resolution.

SECTION 6. The Mayor shall sign this Resolution and the City Clerk shall attest and certify to the passage and adoption thereof.

PASSED, APPROVED, AND ADOPTED this 24th day of June 2014.

Joseph M Lyons
Mayor, City of Claremont

ATTEST:

SDesautels
City Clerk, City of Claremont

APPROVED AS TO FORM:

City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)ss.
CITY OF CLAREMONT)

I, Shelley Desautels, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Resolution No. 2014-53 was regularly adopted by the City Council of said City of Claremont at a regular meeting of said Council held on the 24th day of June, 2014, by the following vote:

AYES:	COUNCILMEMBERS:	CALAYCAY, LYONS, NASIALI, PEDROZA, SCHROEDER
NOES:	COUNCILMEMBERS:	NONE
ABSTENSIONS:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE

S Desautels

City Clerk of the City of Claremont

ORDINANCE NO.2014-

AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLISHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF.

WHEREAS, the City of Claremont is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City of Claremont has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State; and

WHEREAS, the City is a permittee under the “Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4,” issued by the California Regional Water Quality Control Board – Los Angeles Region,” (Order No. R4-2012-0175), which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the “Municipal NPDES permit”).

WHEREAS, the MS4 Permit requires those permittees submitting a Watershed Management Plan, or an Enhanced Watershed Management Plan to develop and implement a Low Impact Development (LID) Ordinance; and

WHEREAS, the new MS4 Permit establishes new requirements regulating discharge and connection into the City’s storm drain facilities, and control of stormwater and non-stormwater runoff; and

WHEREAS, the City of Claremont is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social and economic considerations; and

WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of stormwater and non-stormwater runoff by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

WHEREAS, it is the intent of the City of Claremont to replace the existing Standard

Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under Section 8.28.050(C) "Applicability". Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF CLAREMONT DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 8.28 (Stormwater and Runoff Pollution Control) of Title 8 of the Municipal Code (Public Health and Safety) is hereby deleted and replaced in its entirety, as follows:

Chapter 8.28
STORMWATER AND RUNOFF POLLUTION CONTROL

Sections:

8.28.010 Definitions.

The following words, phrases and terms as used in this chapter shall have the meanings ascribed to them in this Section 8.28.010.

Act or **Clean Water Act (CWA)** means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

Adverse Impact means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants to the storm drain system or to receiving waters.

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes: SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539.

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional

Water Board on June 13, 1994 and subsequent amendments.

Beneficial Uses means existing or potential uses of receiving waters in the permit area as designated by the Regional Board in the Basin Plan.

Best Management Practice (BMPs) means practices or physical devices or systems designed to prevent or reduce pollutant loading from storm water or non-storm water discharges to receiving waters, or designed to reduce the volume of storm water or non-storm water discharged to the receiving water.

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales.

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

City means the City of Claremont, California.

Code of Federal Regulations (CFR) means the codification of the general and permanent rules and regulations published in the Federal Register by the executive departments and agencies of the federal government of the United States.

Commercial Development means any public or private activity not defined as an industrial activity in 40 CFR 122.26(b)(14), involved in the storage, transportation, distribution, exchange or sale of goods and/or commodities or providing professional and/or nonprofessional services. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers .

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage is required if more than one acre is disturbed or the activities are part of a larger plan..

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

Council means the City Council of the City of Claremont.

Dechlorinated/Debrominated Swimming Pool/Spa Discharges means discharges from swimming pools/spas and do not include swimming pool/spa filter backwash or swimming pool/spa water containing bacteria, detergents, wastes, or algaecides, or any other chemicals including salts from salt water pools.

Department means the Community Development Department of the City of Claremont.

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

Director means the Director of Community Development, or his/her authorized deputy, agent, representative or inspector.

Discharge means any addition, release, spill, leak, pumping, flow, escape, dumping, or disposal of any pollutant to the storm drain system or to receiving waters from any conveyance or source regulated under the Clean Water Act or its regulations.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation.

Drinking Water Supplier Distribution System Releases means sources of flows from drinking water storage, supply and distribution line testing, and flushing and dewatering of pipes, reservoirs, and vaults, minor non-invasive well maintenance not involving chemical addition(s) where otherwise regulated by NPDES Permit No CAG674001, NPDES Permit No. CAG994005, or another separate NPDES permit.

Essential Non-Emergency Fire Fighting Activities means fire fighting activities, which simulate emergency responses, and routine maintenance and testing activities necessary for the protection of life and property, including building fire suppression

system maintenance and testing (e.g. sprinkler line flushing) and fire hydrant testing and maintenance. Discharges from vehicle washing are not considered essential and as such are not conditionally exempt.

Flow-through BMPs means modular, vault type “high flow biotreatment” devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

Good Housekeeping Practice means a best management practice related to the transfer, storage, use, or cleanup of materials which when performed in a regular manner minimizes the discharge or potential discharge of pollutants to the storm drain system and/or receiving waters.

Hazardous Material means any material defined as hazardous by Chapter 6.95 of the California Health and Safety Code or any substance designated pursuant to 40 CFR 302. This also includes any unlisted hazardous substance which is a solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), or is a hazardous substance under Section 101(14) of the Act, if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

Hazardous Waste means a hazardous material which is to be discharged, discarded, recycled, and/or reprocessed.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

Illicit Connection means either of the following:

1. Any drain or conveyance whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by a government agency; or

2. Any drain or conveyance connected from a commercial or industrial land use

to the storm drain system which has not been documented in plans, maps or equivalent records and approved by the City.

Illicit Discharge means any discharge to the storm drain system or receiving waters that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. Illicit discharge includes all non-stormwater discharges except discharges pursuant to a NPDES permit or discharges that are exempted or conditionally exempted by such permit.

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Activity means any public or private activity as defined in 40 CFR 122.26(b)(14) required to obtain a NPDES permit.

Industrial/Commercial Facility means any public or private facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, or any facility involved and/or used in providing professional and nonprofessional services. This category of facility includes, but is not limited to, any facility defined by a Standard Industrial Classification (SIC).

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement.

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

National Pollutant Discharge Elimination System (NPDES) permit means a general, group, or industrial permit issued by the United States Environmental Protection Agency, the State Water Resources Control Board or a California Regional Water Quality Control Board pursuant to the Act, that authorizes discharges to waters of the United States.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-Stormwater Discharge means any discharge to the storm drain system and/or receiving waters that is not composed entirely of stormwater.

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces

Permit means the Waste Discharge Requirements for Municipal Separate Storm Sewer Systems within the Coastal Watersheds of Los Angeles County (Order No. R4-2012-0175) and the National Pollutant Discharge Elimination System Permit No. CAS004001, including any amendments, reissuance, renewal, or successor permit issued by the Regional Board.

Person means any natural person, firm, association, club, organization, corporation, partnership, business, trust, public agency, company or other entity which is recognized by law as the subject of rights and duties.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s).

Pollutant shall have the same meaning as set forth in Section 502(6) of the Act and as incorporated into the California Water Code Section 13373. Pollutants include, but are not limited to the following:

1. Commercial and industrial waste (such as fuels, solvents, chemicals, detergents, plastic pellets,
hazardous materials or substances, hazardous wastes, fertilizers, pesticides, soot, slag, ash, and sludge);
2. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium and arsenic) and nonmetals (such as carbon, chlorine, fluorine, phosphorous and sulfur);
3. Petroleum hydrocarbons (such as fuels, oils, lubricants, surfactants, waste oils, solvents, coolants, and grease);
4. Eroded soils, sediment, and particulate materials in amounts which may adversely affect any beneficial use of the receiving waters, flora, or fauna of the state;
5. Animal wastes (such as discharges from confinement facilities, kennels, pens,

recreational facilities, stables, and show facilities);

6. Substances having acidic or corrosive characteristics such as a pH of less than six or greater than nine;

7. Substances having unusual coloration or turbidity, levels of fecal coliform, fecal streptococcus, or enterococcus, which may adversely affect the beneficial use of the receiving waters, flora, or fauna of the state; and

8. Anything which causes the deterioration of water quality such that it impairs subsequent and/or competing uses of the water.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department.

Receiving Waters means all waters of the United States into which a pollutant is or may be discharged. "Waters of the United States" means surface watercourses and water bodies as defined at 40 CFR 122.2, including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry stormwater at and during all times and seasons.

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Board means a Los Angeles Regional Water Quality Control Board.

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.

Routine Maintenance
Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Runoff means any stormwater or non-stormwater discharge from any surface and/or drainage area that reaches the storm drain system and/or receiving waters.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any “facility or activity” is physically located or conducted, including adjacent land used in connection with the facility or activity.

State Board means the State Water Resources Control Board.

Storm Drain System means any street, gutter, conduit, natural or artificial drain, curb, inlet, detention and retention basins, channel and watercourse, and/or other facility or any combination thereof, that is owned or operated by the city and used for the purpose of collecting, storing, conveying, transporting, and/or disposing of runoff.

Storm Water or Stormwater means any surface flow, runoff or drainage which

originates from atmospheric moisture (rainfall or snowmelt) and falls onto land, water, and/or other surfaces.

Stormwater Pollution Prevention Plan (SWPPP) means a plan required by and whose contents are specified in a NPDES permit.

Stormwater Runoff means stormwater which travels across any surface to the storm drain system or receiving waters.

Structural BMP means any permanent facility constructed to control, treat, store, divert, neutralize, dispose of, and/or monitor runoff in order to reduce or measure pollutants.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects. The requirements of this Chapter replace the SUSMP unless otherwise required by the Director or State or Regional Board.

Uncontrolled Discharge means any discharge, intentional or accidental, occurring in such a manner that the discharger is unable to determine or regulate the quantity, quality or effects of the discharge.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

U.S. EPA means the United States Environmental Protection Agency.

8.28.020 General Provisions.

A. Short title. The ordinance codified in this chapter shall be known as the "Stormwater and Runoff Pollution Control Ordinance" and may be referred to as such.

B. Purpose and intent. The purpose of this chapter is to protect the health and safety of the residents of the city by protecting the beneficial uses, marine habitats, and ecosystems of receiving waters from pollutants carried by stormwater and non-stormwater discharges. The intent of this chapter is to enhance and protect the water quality of receiving waters consistent with the Act.

C. Applicability of this chapter. The provisions of this chapter shall apply to the discharge, deposit, addition or disposal of any non-stormwater, stormwater and/or runoff to the storm drain system and/or receiving waters within the City of Claremont.

D. Standards, guidelines and criteria. The director may establish uniform minimum standards, guidelines, and/or criteria for specific discharges, connections and/or BMPs. The provisions of this section shall not prohibit the director from requiring a discharger or permittee from taking additional measures to achieve the objectives of this chapter or any permit. (00-07)

8.28.030 Discharge to the Storm Drain System

A. Except as otherwise conditionally authorized by the Permit or any other NPDES permit, waiver or waste discharge order issued by the U.S. EPA, the state board, or a regional board, provided that the discharger is in full compliance with all requirements of

the permit, waiver or order and other applicable laws and regulations, including the provisions of this chapter, and subject to any requirements specified by the Director, no person shall:

1. discharge non-stormwater to the City's storm drain system or to receiving waters except in compliance with the requirements of this Chapter;
2. cause, allow or facilitate any prohibited discharge;
3. discharge, cause, allow or facilitate any discharge that may cause or threaten to cause a condition of pollution or nuisance as defined in Water Code section 13050, that may cause, threaten to cause or contribute to an exceedance of any water quality standard in any Statewide Water Quality Control Plan, California Toxics Rule, or Basin Plan, or that may cause or contribute to the violation of any receiving water limitation.

B. Pursuant to the Permit, discharges which may be conditionally authorized subject to best management practices and other restrictions or prohibitions determined by the Director include, but are not limited to the following types of discharges:

1. Authorized non-storm water discharges from emergency fire-fighting activities (i.e., flows necessary for the protection of life or property;
2. Natural flows, including natural springs;
3. Flows from riparian habitats and wetlands;
4. Diverted stream flows, authorized by the State or Regional Water Board; Uncontaminated ground water infiltration;
5. Rising ground waters where ground water seepage is not otherwise covered by a NPDES permit;
6. Discharges from drinking water supplier distribution systems where not otherwise regulated by an individual or general NPDES permit;
7. Landscape irrigation;
8. Uncontaminated foundation and footing drains;
9. Uncontaminated water from crawl space pumps;
10. Air conditioning condensation;
11. Uncontaminated non-industrial roof drains;
12. Individual residential and occasional non-commercial car washing;
13. Dechlorinated/debrominated swimming pool/spa discharges; and
14. Street and sidewalk wash waters.

C. The Director may limit or prohibit any discharge which is conditionally authorized by the Permit if the discharge is a source of pollutants or causes or contributes to an exceedance of applicable receiving water limitations or water quality based effluent limitations, including but not limited to imposing conditions on such discharge, requiring control measures and other actions to reduce pollutants, requiring diversion of the discharge to the sanitary sewer, or requiring pretreatment.

D. The Director may require any person to obtain a permit from the City before discharging, or causing, allowing, or facilitating any discharge to the storm drain system. It is unlawful to discharge, cause, allow, or facilitate any discharge to the storm drain system in violation of any permit so required.

E. Littering and other discharge of polluting or damaging substances prohibited.

1. No person shall cause any refuse, rubbish, food waste, garbage, or any other discarded or abandoned objects to be littered, thrown, deposited, left, accumulated, maintained or kept in or upon any street, alley, sidewalk, storm drain, inlet, catch basin, conduit, drainage structure, place of business, or upon any public or private property so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters, except when such materials are placed in containers, bags, recycling bins, or other lawfully established waste disposal facilities protected from stormwater or runoff.

2. No person shall cause the disposal of hazardous materials or hazardous wastes into trash containers used for municipal trash disposal.

3. No person shall cause to be discharged to the storm drain system or to receiving waters any pesticide, fungicide, or herbicide prohibited by the U.S. EPA or the California Department of Pesticide Regulation.

4. No person shall cause the accumulation of pollutants, leaves, dirt, or other landscape debris into a street, alley, catch basin, culvert, curb, gutter, inlet, ditch, natural watercourse, flood control channel, canal, storm drain, or any fabricated or natural conveyance so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters.

5. No person shall cause the disposal of sanitary or septic waste or sewage into the storm drain system from any property or residence or any type of recreational vehicle, camper, bus, boat, holding tank, portable toilet, vacuum truck or other mobile source of waste holding tank, container or device.

6. No person shall discharge or cause to be discharged anything that would result in or contribute to a violation of the city's NPDES permit and any amendment, revision or re-issuance, thereof, either separately or when combined with other discharges.

8.28.031 Illicit Connections Prohibited

A. Installation or use of illicit connections prohibited. No person shall install, maintain or use any connection to the storm drain system or act, cause, permit or suffer any non-stormwater to be discharged or conveyed through a connection to the storm drain system unless the connection has been permitted by the director. This prohibition is retroactive and applies to connections made in the past, regardless of whether made under a permit or other authorization, or whether permissible under the laws or practices applicable or prevailing at the time of the connection.

B. Removal of illicit connection from the storm drain system. If any person fails to remove an illicit connection upon notification by the director, or upon revocation of a connection permit, the director may remove such connection from the storm drain system pursuant to Section 8.28.060 of this chapter. The director may pursue the recovery of costs for such removal pursuant to Section 8.28.060 of this chapter.

8.28.032 Best Management Practices Required

A. Any person engaged in activities which will or may result in pollutants entering the City storm drain system shall undertake all control measures and BMPs as the Director may require to reduce such pollutants. Premises with a high potential threat of discharge may be required to implement a monitoring program meeting standards established by the City. Where best management practices guidelines or requirements have been adopted by any Federal, State, regional, and/or City agency, for any activity, operation, or facility which may cause or contribute to stormwater pollution or contamination, illicit discharges, and/or discharges of non-stormwater to the storm drain system, every person undertaking such activity or operation, or owning or operating such facility shall comply with such guidelines or requirements as may be identified by the Director.

B. Installation of structural BMPs. No person shall install a structural BMP for the purpose of treating, neutralizing, disposing of, monitoring or diverting to the sanitary sewer system any runoff without the approval of the director and of the Los Angeles County Sanitation District or any successor thereto. Such facilities may be subject to plan review, application and issuance of operating permits pursuant to this code.

C. BMPs to be consistent with environmental goals. No person shall install or implement a BMP that transfers pollutants to air, groundwater, surface soils and/or other media in a manner inconsistent with applicable environmental laws and regulations.

D. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to submit documentation demonstrating coverage by and compliance with any applicable permit, including copies of any notice of intent, storm water pollution prevention plans, inspection reports, monitoring results, and other information deemed necessary to assess compliance with this Chapter or any NPDES permit. Each discharger identified in an individual NPDES permit relating to stormwater discharges shall comply with and undertake all activities required by such permit.

E. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to enter into an agreement for the operation and maintenance of any structural control measures and to record such agreement with the County Recorder's office.

F. The following BMPs are required of every owner or occupant of any property:

1. No person shall leave, deposit, discharge, dump, or otherwise expose any chemical, fuel, animal waste, garbage, batteries and/or septic waste in an area where actual or potential discharge to the city streets or the storm drain system may occur. Any spills, discharge, or residues shall be removed as soon as possible and disposed of properly.
2. Runoff from landscape irrigation, air conditioning condensate, water line flushing, foundation/footing drains, individual residential car washing, dechlorinated/debrominated swimming pool/spa discharges and sidewalk washing shall be conducted in a manner which minimizes or eliminates the possibility of pollutant discharges reaching the city storm drain system or

receiving waters.

3. Runoff from washing paved areas, including but not limited to parking lots, on industrial or commercial property is prohibited unless specifically required by federal, state, or local health or safety codes and not in violation of any other provision of this code. Runoff from authorized washing of paved areas shall be minimized to the extent practicable.
4. Objects, such as motor vehicle parts, containing grease, oil, or other hazardous materials, and unsealed receptacles containing hazardous materials, shall not be stored in areas exposed to stormwater or otherwise susceptible to runoff.
5. Any machinery or equipment which is to be repaired or maintained in areas exposed to stormwater or otherwise susceptible to runoff shall be provided with containment areas to control leaks, spills, or discharges.
6. All motor vehicle parking lots with more than 25 parking spaces and located in areas exposed to stormwater or otherwise susceptible to runoff shall have debris removed by regular sweeping or other equally effective measures. Such debris shall be collected and properly disposed of.

8.28.033 Monitoring, Information Collection, and Reporting

A. The Director may require any person discharging or causing, allowing, or facilitating a discharge to the storm drain system or receiving waters to take any or all of the following actions:

1. to submit information necessary to comply with the Permit or to confirm that person's compliance with this Chapter;
2. to monitor discharges and submit reports of discharge activities;
3. to maintain records of monitoring and discharging; and
4. to take any other action necessary to comply with the Permit or this Chapter.

B. Notwithstanding any other requirement of law, any known or suspected release of materials, pollutants or waste, which may result in pollutants or non-stormwater discharges entering storm water, the storm drain system or waters of the state or United States, shall be reported immediately in the following manner by any person in charge of a premises or responsible for the premises' emergency response:

1. The release of a hazardous material shall be immediately reported to emergency services by emergency dispatch services (911).
2. The release of a nonhazardous material shall be reported as follows:
   a. to the Director and to the 24-hour storm water hotline by telephone no later than 5:00 P.M. on the same business day;
   b. if the release occurs after 5:00 P.M. on a weekday, on a weekend or holiday, to the 24-hour storm water hotline on the same day and to the Director by telephone on the next business day;

c. a written notification of the release shall also be made to the Director within ten business days of the release. A copy of the written notice shall be retained at the premises for at least three (3) years. The notification shall include a detailed written report describing the cause of the discharge, corrective action taken and measures to be taken to prevent future occurrences, and measures taken to remediate the effects of the discharge. Such notification shall not relieve the discharger or permittee from liability or fines incurred as a result of the uncontrolled discharge.

3. In addition to the above requirements, the release of any hazardous materials or substances, sewage, oil, or petroleum to any waters of the state, or discharged or deposited where it is or probably will be discharged in or on any waters of the state, shall be reported to the State Office of Emergency Services, as required by Sections 13271 and 13272 of California Water Code.

8.28.034 Control of Runoff Required – Industrial and Commercial Facilities

A. Prohibited discharges from industrial or commercial activity. Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. The following discharges from industrial or commercial activities are prohibited unless the discharge is in compliance with a NPDES permit:

1. Discharge of wash waters to the storm drain system from the cleaning of gas stations, auto repair garages, or other types of auto repair facilities;
2. Discharge of wastewater to the storm drain system from mobile auto washing, steam cleaning, mobile carpet cleaning, or other such mobile commercial and industrial operations;
3. Discharge to the storm drain system from areas where repair of machinery and equipment, including motor vehicles, which are visibly leaking oil, fluids or coolants is undertaken;
4. Discharge to the storm drain system from storage areas for materials containing grease, oil, or
hazardous materials, or from uncovered receptacles containing hazardous materials, grease, or oil;
5. Discharge of commercial/public swimming pool filter backwash to the storm drain system;
6. Discharge from the washing of toxic materials from paved or unpaved areas to the storm drain system;
7. Discharge from the washing out of concrete trucks to the storm drain system; and
8. Discharge from the washing or rinsing of restaurant mats, equipment or garbage bins or cans in such a manner that causes non-stormwater to enter the storm drain system.

B. Industrial/commercial facility sources required to obtain a NPDES permit. Any industrial or commercial facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

C. Best management practices for industrial and commercial facilities. All industrial and commercial facilities shall implement BMPs which will effectively prevent the direct or indirect discharge of pollutants to the storm drain system or receiving waters to the maximum extent practicable. Minimum BMPs applicable to all industrial and commercial facilities include, but are not limited to:

1. Termination of all non-stormwater discharge to the storm drain system that is not specifically authorized by a NPDES permit;
2. Exercising general good housekeeping practices;
3. Incorporating regular scheduled preventative maintenance into operations;
4. Maintaining spill prevention and control procedures;
5. Implementing soil erosion control;
6. Posting on-site private storm drains to indicate that they are not to receive liquid, solid wastes or pollutants;
7. Implementing regular cleaning of the on-site private storm drain system; and
8. Insuring that stormwater runoff is directed away from operating, processing, fueling, cleaning and storage areas.

8.28.035 Control of Runoff Required – Municipal Facilities

A. Public facility sources required to obtain a NPDES permit. Any public facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

8.28.040 Control of Runoff Required – Construction Activity

A. Stormwater and runoff pollution mitigation for construction activity. No person shall commence any construction activity for which a permit is required by this Chapter or any

law or regulation without implementing all stormwater and runoff pollution mitigation measures required by such permit(s), law, regulation or this Chapter. In addition to any other requirements set forth in this Chapter, prior to obtaining a grading or building permit, each operator of any construction activity shall submit evidence to the Director that all applicable permits have been obtained, including but not limited to the General Construction Activities Storm Water Permit and State Water Board 401 Water Quality Certification.

B. No grading permit shall be issued for any development with a disturbed area of one (1) acre or greater or which is part of a larger common plan of development unless the applicant can show that (i) a Notice of Intent to comply with the State Construction Activity Storm Water Permit has been filed and (ii) a Storm Water Pollution Prevention Plan has been prepared. The City may adopt regulations establishing controls on the volume and rate of stormwater runoff from new developments and redevelopments of less than one (1) acre as may be appropriate to minimize the discharge and transport of pollutants.

C. Prior to obtaining a grading or building permit, each operator of any construction site of less than one (1) acre shall cause to be prepared and submitted to the City an erosion and sediment control plan which satisfies the requirements of the Permit, to ensure that discharges of pollutants are effectively prohibited and will not cause or contribute to an exceedance of water quality standards. A SWPPP prepared in accordance with the General Construction Permit may be substituted for an erosion and sediment control plan. No operator of any construction activity shall commence any construction activity prior to receiving written approval of the erosion and sediment control plan from the Director.

D. Best management practices for construction activity. All BMPs required as a condition of any NPDES permit for construction activity granted by U.S. EPA, the State Water Resources Control Board, or a regional board or pursuant to this code shall be maintained in full force and effect during the term of the project, unless authorized by the director.

8.28.041 Control of Runoff Required – New Development and Redevelopment

A. Prior to construction of a development, redevelopment or new development project, such project shall be evaluated by the City for its potential to discharge pollutants to the storm drain system or to receiving waters based on its intended land use. Such evaluation shall be conducted in accordance with development planning requirements established by the Regional Board or its Executive Officer, pursuant to the Municipal NPDES Permit. No discretionary permit may be issued for any new development or redevelopment project until the Director finds that the project plans comply with the LID /SUSMP requirements set forth in the Permit and in this Chapter.

B. Once a development, redevelopment or new development project has been evaluated for its potential to discharge pollutants to the storm drain system or receiving waters, the City shall require appropriate BMPs to be implemented during construction

and following project completion. The prescription of BMPs shall be in keeping with Standard Urban Storm Water Mitigation Plan requirements established by the regional board or its executive officer, pursuant to the municipal NPDES permit and with this Chapter.

8.28.050 Stormwater Pollution Control Measures for Development Planning and Construction Activities

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City of Claremont to further define and adopt stormwater pollution control measures, develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, alternative compliance for technical infeasibility from the requirements of the onsite retention requirements, and collect funds for projects that are granted alternative compliance for technical infeasibility. Except as otherwise provided herein, the City of Claremont shall administer, implement and enforce the provisions of this Section.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of Section 8.28.050:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities of 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(D) Effective Date. The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 became effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;
d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall be in accordance with the City of Claremont's Green Street Policy and the USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
   i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
   ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
b. When, as determined by the City of Claremont, 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:
   i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.
   ii. Locations where seasonal high groundwater is within five (5) to ten (10) feet of surface grade;
   iii. Locations within 100 feet of a groundwater well used for drinking water;
   iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
   v. Locations with potential geotechnical hazards;
   vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.
c. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications and requirements specified in the Los Angeles County Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the City of Claremont to determine eligibility.

d. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or

ii. The one-year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

e. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the City of Claremont to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, “Multi-Phased Project” shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(F) Non-Planning Priority Projects. For new development or redevelopment projects not meeting the “Planning Priority Projects” thresholds, but which may potentially have adverse impacts on post-development storm water quality, a site-specific plan including post-construction design, source and/or treatment control to mitigate storm water pollution shall be required where one or more of the following project characteristics exist:

a. Vehicle or equipment fueling areas;
b. Vehicle or equipment maintenance areas, including washing and repair;
c. Commercial or industrial waste handling or storage;
d. Outdoor handling or storage of hazardous materials;
e. Outdoor manufacturing areas;
f. Outdoor food handling or processing;
g. Outdoor animal car, confinement, or slaughter; or
h. Outdoor horticultural activities.

(G) Other Agencies of the City of Claremont. All City of Claremont departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and

Redevelopment projects and report their activities annually to the Director of Community Development.

(H) Certification. As a condition for issuing a certificate of occupancy for a new development or redevelopment project the Director, shall require the applicant, facility operators and/or owners, as appropriate, to construct and/or employ all stormwater control BMPs identified in the approved development planning documents and submit a signed certification stating that the project site and all BMPs will be employed and maintained in compliance with the City's LID/SUSMP ordinance and other applicable regulatory requirements until the responsibility for such maintenance is legally transferred.

(I) Fees. City Council may establish fees for services provided under this Chapter, as authorized under Sections 66016 and 66018 of the California Government Code.

8.28.060 Violations and Enforcement

A. Enforcement - Director's powers and duties. The director shall have primary responsibility for the enforcement of the regulations in this chapter. The director may enter into agreements with other departments for the purpose of implementing this chapter.

B. Identification for inspectors and maintenance personnel. The director shall provide means of identification to inspectors and storm drain system maintenance personnel which shall identify them as such. Inspectors and storm drain system maintenance personnel shall identify themselves upon request in the performance of their duties under this chapter.

C. Obstructing access to facilities prohibited. No object, whether a permanent structure, a temporary structure, or any object which is difficult to remove, shall be located on any storm drain easement or placed in such a position as to interfere with the ready and easy access to any facility conveying stormwater or runoff as described in this chapter unless authority is granted by the director. Upon notification by the director, any such obstruction shall be immediately removed by the responsible party at no expense to the city, and shall not be replaced.

D. Inspection to ascertain compliance - Access required.

1. The director may inspect in a manner authorized by law, as often as he/she deems necessary, any publicly or privately owned storm drain, storm drain connection, street, gutter, yard, plant, storage facility, building, BMP, NPDES permit, SWPPP, stormwater management plan, construction activity or other facility to ascertain whether such facilities, plans, or protective measures are in place, maintained and operated in accordance with the provisions of this chapter.

2. In the course of such inspection, the director may:

a. Inspect, sample, make flow measurements of any runoff, discharge or threatened discharge;

b. Place on the premises devices for runoff or discharge sampling, monitoring, flow

measuring or metering;
c. Inspect, copy, or examine any records, reports, plans, test results or other information required to carry out the provisions of this chapter, to the extent allowed by law; and
d. Photography any materials, storage areas, waste, waste containers, BMP, vehicle, connection, discharge, runoff and/or violation discovered during an inspection.

E. Interference with inspector prohibited. No person shall, during reasonable hours, refuse, restrict, resist or attempt to resist the entrance of the director into any building, factory, plant, yard, construction project or other place or portions thereof in the performance of his/her duty within the powers conferred upon him/her by law.

F. Notice to correct violations - Director may take action. The director may issue a notice of violation and order to comply to achieve compliance with the provisions of this chapter. Failure to comply with the terms and conditions of a notice of violation and order to comply shall constitute a violation of this chapter. If a person fails to comply with an order issued under this section to remove an illicit connection, obstruction or other encroachment to the storm drain system, the director may perform the work as provided in Section 8.28.060 H. of this chapter. The person responsible for installing or operating such a facility shall be liable to the city for the cost of such work, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

G. Violation a public nuisance. Any discharge in violation of this chapter, any illicit connection, and/or any violation of runoff management requirements shall constitute a threat to public health and safety and is declared and deemed a public nuisance.

H. Nuisance abatement - Costs. Whenever a nuisance shall be found to exist on any premises, the director may summarily abate such nuisance upon determination that the nuisance constitutes an immediate threat to public health or safety, or the director may notify in writing the person(s) having control of or acting as agent for such premises to abate or remove such nuisance within such time as is stated on the notice. Upon the failure or refusal of such person(s) to comply with the notice, the director may abate such nuisance in the manner provided by law. The person(s) having control of such premises, in addition to the penalties provided by this chapter, shall be liable to the city for any costs incurred by the city fur such abatement, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

I. Violation - Penalty. Any person violating any provision of this chapter shall be guilty of a misdemeanor. Such violation shall be punishable by a fine of not more than $1,000.00 or by imprisonment in the county jail for a period not to exceed six months. Each day during any portion of which such violation is committed, continued or permitted shall constitute a separate offense and shall be punishable as such.

J. Penalties not exclusive. Penalties under this chapter are in addition to, and do not supercede or limit, any and all other penalties or remedies provided by law.

K. Conflicts with other code sections. The provisions of this chapter shall control over any inconsistent or conflicting provisions of this code.

L. Severability. If any portion of this chapter or the application thereof to any person or

circumstance is held invalid, the remainder of this chapter, and the application of such provisions to other persons or circumstances, shall not be affected thereby. (00-07).38.28

SECTION 2. The City Council finds that the adoption of this Ordinance amending the Municipal Code is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Ordinance since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the entirety of the proposed Ordinance is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the proposed Ordinance is not a "project" pursuant to CEQA since it can be seen with certainty that no adverse effect on the physical environment would occur pursuant to the proposed Ordinance since the only effects on the environment would be to improve water quality in stormwater channel discharges, and these effects are beneficial, and not adverse (see State CEQA Guidelines section 15061(b)(3)). City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Ordinance.

SECTION 3. The Mayor shall sign this ordinance and the City Clerk shall attest and certify to the passage and adoption of it, and within fifteen (15) days, publish in the Claremont Courier, a semi-weekly newspaper of general circulation, printed, published and circulated in the City of Claremont, and thirty (30) days thereafter it shall take effect and be in force.

PASSED, APPROVED and ADOPTED this ______ day of _____________, 2014.

____
Mayor, City of Claremont

ATTEST:

____
City Clerk, City of Claremont

APPROVED AS TO FORM:

____
City Attorney, City of Claremont

CLAREMONT CITY COUNCIL
Certificate of Action

I, Jamie Costanza, Deputy City Clerk of the City of Claremont, California, hereby certify, under penalty of perjury, that the following is a true and correct copy of action taken by the City Council of the City of Claremont at a regular meeting of said Council held June 24, 2014:

Municipal Separate Storm Sewer System (MS4) Permit; Authorization to Submit Draft Watershed Management Plan (WMP) and Coordinated Integrated Monitoring Plan (CIMP) to the Los Angeles Regional Water Quality Control Board; Amendment to Chapter 8.28 (Stormwater and Runoff Pollution Control of the Claremont Municipal Code; Adoption of the City of Claremont Green Streets Policy

Councilmember Calaycay moved to authorize the submittal of the Draft WMP and CIMP with the Los Angeles Regional Water Quality Control Board, introduced AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLSIHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF; waived further reading, placed the Ordinance on first reading, referred the Ordinance to the City Attorney for not less than five days, and direct staff to publish a summary of the Ordinance in the local newspaper; adopted Resolution No. 2014-53, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY; and allowed the City of Claremont logo to be affixed to the letter presented by the League of California Cities and California Contract Cities, thereby supporting the use of California Water Bond funding for stormwater and urban runoff projects, seconded by Councilmember Pedroza, and carried on a roll call vote as follows:

AYES: ***Councilmember – Calaycay, Lyons, Nasiali, Pedroza, Schroeder***
NOES: ***Councilmember – None***
ABSENT: ***Councilmember – None***

Executed this 26th day of June, 2014, at Claremont, California.

Jamie Costanza

Jamie Costanza
Deputy City Clerk
City of Claremont

City of La Verne Green Streets Policy-Draft

<u>Purpose</u>

The City of La Verne shall consider implementing green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects. This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that can provide water quality improvement by preventing stormwater runoff through the use of vegetated facilities. Through the use of infiltration, biofiltration and storage mechanisms, a green street can provide water quality benefits, replenish groundwater, create attractive streetscapes, connect neighborhoods, create parks and wildlife habitats, and provide pedestrian and bicycle access.

<u>Policy</u>

A. Application. The City of La Verne shall require that new public and private construction of 10,000 sq. ft. or more of impervious surface area and road development that results in the creation or addition or replacement of 5,000 sq. ft. or more of impervious surface area on an already developed site consider green street implementation. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of La Verne shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs for both private and public projects.

C. Best Management Practices (BMPs). The City of La Verne shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the City of La Verne for use in public and private developments.

D. Retrofit Scope. The City of La Verne shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of La Verne shall incorporate aspects of green streets into internal annual staff trainings.

Exhibit A – Ordinance No. XXXX
City of La Verne Zoning Amendment Case No. XXX-XXZA
Amending Title 13 to add Chapter 13.60

Low Impact Development

Title 13 of the La Verne is hereby amended to add the following Chapter:

Chapter 13.60 Low Impact Development

13.60.010 Title

This Chapter shall be known as the “City of La Verne Low Impact Development (LID) Ordinance” and may be so cited.

13.60.020 Purpose

It is the purpose of this chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development toward existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts for stormwater runoff on the biological integrity of Natural Drainage Systems and the Beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMP's), (including Source Control BMP's such as good housekeeping practices), LID Strategies, and Treatment Control BMP's.

F. Properly select, design and maintain LID and Hydromodification Control BMP's to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMP's to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

    1. On-site infiltration bioretention and/or rainfall harvest and use.

    2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

13.60.030 Findings

The City of La Verne hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City have the potential, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stromwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

13.60.040 Definitions

Except as specifically provided herein, any term used in this Chapter shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this Chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this Chapter.

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater.

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments.

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged t the receiving water.

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as

used in this Chapter is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMP's with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMP's include bioretention systems with an underdrain and bioswales.

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum two (2) foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with as overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration.

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

"City" means the City of La Verne.

"City Engineer" means the City Engineer for the City of La Verne.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line of grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading, or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan.

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

"Conveyance Facility" means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

"Design Engineer" means the registered professional engineer responsible for the design of the stormwater management plan.

"Detention System" means a system, which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit, or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately project public health and safety.

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

"Director" means the Director of Public Works for the City of La Verne.

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation.

"Engineered Site Grading Plan" means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and proposed stormwater management and measures which are prepared to ensure that the objectives of this Chapter are met.

"Flow-through BMP's" means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board, which authorizes the discharge of stormwater from construction activities under certain conditions.

“General Industrial Activities Storm Water Permit (GIASP)” means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

“Grading” means any stripping, excavation, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

“Green Roof” means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall that is intercepted by vegetation leaves through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof systems planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

“Hazardous Material(s)” means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

“Hillside” means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

“Hydromodification” means the alteration of a natural drainage system through a change in the system’s flow characteristics.

“Impervious Surface” means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

“Industrial Park” means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry uses.

“Infiltration BMP” means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMP’s include infiltration basins, dry wells, and pervious pavement.

“LID” means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

“Maximum Extent Practicable or MEP” means the extent, which the City can reduce, the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMP’s, and rejecting applicable BMP’s only where: other effective BMP’s will serve the same purpose, the BMP’s would not be technically feasible; or the cost would be prohibitive. Factors considered include, but are not limited to:

A. Effectiveness: Whether the BMP addresses a pollutant of concern.

B. Regulatory Compliance: Whether the BMP complies with storm water regulation, as well as other environmental regulations.

C. Public Acceptance: Whether the BMP has public support.

D. Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved.

E. Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources.

“MS4” means Municipal separate Storm Drain Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

A. Owned or operated by a State, City, Town, Borough, County, Parish, District, Association, or other public body (created by to pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State Law such as sewer districts, flood control district or drainage districts, or similar entity, or an Indian Tribe or an authorized Indian Tribal Organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

B. Designed or used for collecting stormwater;

C. Which is not a combined sewer; and

D. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

“National Pollutant Discharge Elimination System (NPDES)” means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Sections 307, 402, 318, and 405. The term includes an “approved program”.

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.

"New Development" means land disturbing activities, structural development, including construction or installation of a building or structure, creation of impervious surfaces, and land subdivision.

"Non-stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater.

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for business, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

"Planning Priority Projects" means development projects subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

1. Commercial and industrial waste such as: fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge.

2. Metals such as: cadmium, lead, zinc, copper, silver, nickel, chromium, and non-metals such as phosphorus and arsenic.

3. Petroleum hydrocarbons such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease.

4. Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

5. Animal wastes such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities.

6. Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

"Public Works Department" means the City of La Verne Public Works Department.

“Project” means all development, redevelopment, and land disturbing activities. The term is not limited to “Project” as defined under CEQA.

“Rainfall Harvest and Use” means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses.

“Receiving Water” means “water of the United States” into which waste and/or pollutants are or may be discharged.

“Redevelopment” means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of a facility, nor does it include emergency construction activities required to immediately protect public health and safety.

“Regional Board” means the California Regional Water Quality Control Board, Los Angeles Region.

“Retail Gasoline Outlet” means any facility engaged in selling gasoline and lubricating oils.

“Retention” means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands, and in which water is removed through infiltration and/or evaporation processes.

“Routine Maintenance” routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

2. Perform as needed restoration work to preserve the original design grade, integrity, and hydraulic capacity of flood control facilities.

3. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such project results in increased capacity.

5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.
*Update existing lines includes replacing existing lines with new materials or pipes.
**New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

“Sediment” means mineral or organic matter that has been removed from its site of origin by the process of soil erosion, is in suspension in water, or is being transported.

“Significant Ecological Areas (SEA’s)” means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity. Areas are designated as SEA’s, if they possess one or more of the following criteria:

A. The habitiat of rare, endangered, and threatened plant and animal species.

B. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

C. Biotic communities, vegetative associations, and habitat of plant and animal species that are wither one of a kind or are restricted in distribution in Los Angeles County.

D. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

E. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in population or community.

F. Areas important as game species habitat or as fisheries.

G. Areas that would provide for preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

H. Special Areas.

“Site” means land or water area where any “facility or activity” is physically located or conducted, including adjacent land used in connection with the facility or activity.

"Storm Drain System" means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose to collecting, storing, transporting, or disposing of stormwater and are located within the City of La Verne.

"Storm Water or Stormwater" means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in it's meaning, this term may be spelled or written as one word or two separate words.

"Stormwater Runoff" means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

"SUSMP" means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES permit Order No. 01-183, NPDES No. CAS004001, and required plans that designate best management practices (BMP's) that must be used in specified categories of development projects.

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

"Water Quality Design Storm Event" means any of the volumetric or flow rate based design storm events for water quality BMP's identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

13.60.050 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this chapter are complex in nature. Effort has been made to simplify terms the extent the subject matter permits.

13.60.060 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No.

R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more of surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City's Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharge directly to a Significant Ecological Area (SEA), where the development will:

    i. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

    ii. Create 2,500 square feet of impervious surface area.

11. Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

    i. Conserve natural areas.

    ii. Protect slopes and channels.

    iii. Provide storm drain system stenciling and signage.

    iv. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

    v. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development.

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, which does not disturb additional area and maintains the original grade and alignment, is considered a routine

maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwellings and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

13.60.070 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 13.60.060 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) on-site through:

   1. Minimizing the impervious surface area; and

   2. Controlling runoff form impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

13.60.080 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvesting and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltrantion systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration sue to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site, as calculated by Equation 1 below:

   Equation 1:
   $Bv = 1.5 * [SWQDv - Rv]$

   Where:

   Bv = Biofiltration volume

SWQDv = The stormwater runoff from a 0.75 inch, 24-hour storm or the 85^{th} percentile storm, whichever is greater

Rv = Volume reliably retained on-site

B. Offsite infiltration – Use Infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:

Mv = 1.0 * [SWQDv - Rv]

Where:

Mv = Mitigation volume

SWQDv = The volume of stormwater runoff reliably retained on-site.

C. Offsite Projects – Retrofit existing Development – Use infiltration, bioretention, rainfall harvesting and use and/or biofiltration BMPs to retrofit an existing development, with similar and uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stromwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

13.60.090 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting

forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If the City Engineer determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, the City Engineer shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

B. If the plan is approved, the City will require the following:

1. The applicant shall provide copies of all necessary State, Federal, or local permits relating to stormwater management to the City.

2. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request by the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Recorder prior to issuance of occupancy.

3. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred: and either:

   i. A signed statement from the pubic entity assuming responsibility for BMP maintenance; or

   ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct an maintenance inspection at least once a year; or

   iii. Written text in project covenants, conditions, and restrictions (CC&R's) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association.

4. The applicant shall post cash or a letter of credit in an amount determined by the City Engineer up to 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

5. This deposit shall be returned to the applicant (in case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

6. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm and stormwater BMP's shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

13.60.100 Plan Review Fees

The City Council from time to time shall establish by resolution filing fees for applications, which shall be paid to the City at the time of filing. No application shall be considered filed until the established fees have been paid to the City. No fee will be required in the case of proceedings initiated by either the Council or Planning Commission.

13.60.110 Maintenance Agreement

A. Maintenance Agreement Required – A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMP's which meet the performance standards provided in the this section and identified in the Los Angeles County Municipal Storm Water Permit No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

B. Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMP's shall be undertaken.

C. Maintenance Agreement Provisions shall include:

   1. The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMP's, with a detailed annual estimated budget for the initial two (2) years, and a clear statement

that only future maintenance activities in accordance with the Maintenance Agreement shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement shall be provided by the party responsible for maintenance to the City at least 14 days in advance of commencing work.

2. The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMP's.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violation, as a public nuisance, pursuant to the procedures set forth in Chapter 1.04.120 of the La Verne Municipal Code.

D. A fully executed "Maintenance Covenant for Permanent BMP's Requirements" shall be recorded with the Los Angeles County Clerk and be submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant document shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMP's for post construction. The information to be provided for this exhibit shall include but not be limited to:

1. 81/2" x 11" exhibits with recorded property owner information.

2. Types of BMP's (i.e. site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without property owner being aware of the ramifications to BMP implementation.

3. A plan that clearly depicts location of BMP's, especially those located below grade.

4. A matrix depicting the types of BMP's, frequency of inspection, type of maintenance required, and if proprietary BMP's, the company information to perform the necessary maintenance.

5. Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.

6. Understanding the documentation of proper maintenance must be presented to the City upon request.

13.60.120 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provision of Chapter 1.24 of the La Verne Municipal Code.

13.60.130 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participation in the work.

13.60.140 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

13.60.150 Emergency Measures

When emergency measures are necessary to moderate a nuisance, to protect public safety, heath and welfare, and/or prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all such costs.

13.60.160 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

City of Pomona
Green Streets Policy

Purpose

The City of Pomona shall implement green street Best Management Practice (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff while also providing design elements that creates attractive streetscapes. Green Streets can foster unique and attractive streetscapes that protect and enhance neighborhood livability and integrate, rather than separate, the built and natural environments. Green Streets encourage the planning of landscapes and vegetation. City landscapes and trees contribute environmental benefits such as reduced summer air temperatures, reductions in global warming through carbon sequestration, air pollution screening, and wildlife habitat corridors, in addition to stormwater surface runoff reduction.

Policy

A. Application. The City of Pomona shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are major arterials as defined in the City's General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are substantially maintained.

B. Amenities. The City of Pomona shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The City of Pomona shall use the City of Los Angeles Green Streets Guidance, USEPAs *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Street* or equivalent guidance developed by the City of Pomona for use in public and private developments.

D. Retrofit Scope. The City of Pomona shall use the City's Watershed Management Program to identify opportunities for Green Street BMP retrofits. Final decisions regarding

implementation will be determined by the Public Works Director and/or designee based on the availability of adequate funding.

E. Outreach. The City of Pomona shall educate citizens, businesses, and the development community/industry about Green Streets and how they can serve as urban gateways to enhance, improve, and connect neighborhoods to encourage support, demand and funding for these projects.

F. Training. The City of Pomona shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

WHEREAS, the City is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity;

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175 ("MS4 Permit"), issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Pomona; and

WHEREAS, to comply with the mandates of the MS4 Permit, the City shall adopt a Low Impact Development (LID) ordinances.

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Pomona, California, as follows:

SECTION 1. That Ordinance No. 4006, also known as the Pomona City Code, is hereby amended to include the addition of Article VI, "Low Impact Development" to Chapter 74, "Buildings and Building Regulations" as follows:

ARTICLE VI. LOW IMPACT DEVELOPMENT

DIVISION 1. GENERALLY

Sec. 74-310. Title.

This Ordinance shall be known as the "City of Pomona Low Impact Development (LID) Ordinance" and may be so cited.

Sec. 74-311. Findings.

The City of Pomona finds that:

(1) Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

(2) Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased non-point source pollutant loading to the receiving waterbodies and the beaches.

(3) Stormwater runoff produced by land development contributes to increased quantities of waterborne pollutants.

(4) Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed and the Santa Ana River Watershed.

(5) Increase stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

(6) Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

(7) Adopting the standards, criteria, and procedures contained in this Article and implementing the same will address many of the deleterious effects of stormwater runoff.

Sec. 74-312. Purpose.

The provisions of this Article are adopted pursuant to the Federal Water Pollution Control Act, also known as the "Clean Water Act," codified and amended at 33 U.S.C. 1251 *et seq*. The intent of this Article is to enhance and protect the water quality of the receiving waters of the United States in a manner that is consistent with the Clean Water Act (and acts amendatory thereof or supplementary thereto), applicable implementing regulations, and the Municipal NPDES permit (as defined below, and any amendment, revision, or re-issuance thereof). It is the purpose of this Article to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

(1) Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

(2) Minimize the adverse impacts from stormwater runoff on the biological integrity of natural drainage systems and the beneficial uses of waterbodies.

(3) Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration, and rainfall harvest and use.

(4) Maintain existing riparian buffers and enhance riparian buffers when possible.

(5) Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs, defined below) including Source Control BMPs such as good housekeeping practices, LID strategies, and Treatment Control BMPs.

(6) Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

(7) Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

(a) On-site infiltration, bioretention and/or rainfall harvest and use.

(b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

Sec. 74-313. Definitions.

The following terms, phrases, words, and derivatives shall have the meaning defined below:

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and any subsequent amendments.

Beneficial Use means the existing or potential use of receiving waters as designated by the Los Angeles or Santa Ana Regional Water Quality Control Boards in their respective basin plans for the County.

Best Management Practices or BMPs are practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water.

City means the City of Pomona.

City Engineer means the City Engineer for the City of Pomona.

Conveyance Facility means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

Design Engineer means the registered professional engineer responsible for the design of the stormwater management plan.

Detention System means a system which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

Development means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Director means the Director of Public Works for City of Pomona.

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, or excavation.

Engineered Site Grading Plan means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and propose stormwater management and measures which are prepared to ensure that the objectives of this Article are met.

Grading means any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

Hardscape means any durable, pervious or impervious surface material, including paving for pedestrians and vehicles.

Hydromodification means the alteration of a natural drainage system through a change in the system's flow characteristics.

Impervious Surface means a surface that does not allow stormwater runoff to slowly perchlorate into the ground.

Low Impact Development or LID means technologies and practices that are part of a sustainable stormwater management strategy that controls, retains or filters stormwater and urban runoff on site.

Maximum Extent Practicable or *MEP* means the extent to which the City can reduce the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMPs, and rejecting applicable BMPs only where: (i) other effective BMPs will serve the same purpose; (ii) the BMPs would not be technically feasible; or (iii) the cost would be prohibitive. Factors considered include, but are not limited to:

(1) Effectiveness: Whether the BMP addresses a pollutant of concern

(2) Regulatory Compliance: Whether the BMP complies with storm water regulations, as well as other environmental regulations

(3) Public acceptance: Whether the BMP has public support

(4) Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved

(5) Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources

Municipal NPDES Permit means California Regional Water Quality Control Board, Los Angeles Region, Order No. R4-2012-0175, NPDES Permit No. CAS004001 Waste Discharge Requirements For Municipal Separate Storm Sewer System (MS4) Discharge Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach MS4, and any amendment thereto or re-issuance thereof.

Municipal Separate Storm Sewer System (referred to herein as "MS4"), means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(1) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved

management agency under section 208 of the CWA that discharges to waters of the United States;

(2) Designed or used for collecting or conveying stormwater;

(3) Which is not a combined sewer; and

(4) Which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR Section 122.2.(40 CFR Section 122.26(b)(8)).

Natural Drainage System means any unlined or unimproved (not engineered) creek, stream, river, or similar waterway.

Non-storm Water Discharge means any fluid discharge to the storm drain system and/or receiving waters that is not composed entirely of storm water but may not necessarily be an illicit discharge.

NPDES or *National Pollutant Discharge Elimination System* means the national permitting program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Clean Water Act (CWA) §307, 402, 318, and 405. The term includes an "approved program."

Mandated by Congress under the Clean Water Act, the NPDES Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges which adversely affect the quality of our nation's waters. The program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

Pollutants of Concern means chemical, physical, or biological components of stormwater that impair the beneficial uses of receiving waters, including those defined in Section 502(6) of the Federal Water Pollution Control Act ("Clean Water Act," 33 U.S.C. Section 1362(6)), and incorporated by reference into California Water Code Section 13373.

Public Works Department means the City of Pomona Public Works Department.

Receiving Water means a "water of the United States" (as defined in 33 C.F.R. section 328.3(a)(7)) into which waste and/or pollutants are or may be discharged.

Retention means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands and in which water is removed through infiltration and/or evaporation processes.

Runoff means any runoff including stormwater and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically comprised of base flow (either contaminated with pollutants or uncontaminated) and nuisance flows.

Sediment means mineral or organic particulate matter that has been removed from its site of origin by the processes of soil erosion, is in suspension in water, or is being transported.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Storm Drain means a conduit, pipe, swale, natural channel, or man-made structure which serves to transport stormwater runoff. Storm drains may be either enclosed or open.

Stormwater means runoff that occurs as the result of rainfall.

Stormwater Quality Design Volume (SWQDv) means the runoff generated by the greater of either:

(1) The 0.75-inch, 24-hour rain event; or

(2) The 85^{th} percentile, 24-hour rain event, as determined from the *Los Angeles County Department of Public Works 85^{th} Percentile Precipitation Isohyetal Map*.

Urban Runoff means surface flows, other than stormwater, emanating from development.

Water Quality Design Storm Event means any of the volumetric or flow rate based design storm events for water quality BMP's identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

DIVISION 2. NEW DEVELOPMENTS AND REDEVELOPMENT PROJECTS PROVISIONS

Sec. 74-314. Applicability.

These procedures and standards set forth in this Article, the BMP design information found in the Los Angeles County Municipal Storm Water Permit, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the City of Pomona's authority to adopt and publish or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) All development projects equal to one (1) acre or greater of disturbed area and adding more than ten thousand (10,000) square feet of impervious surface area;

(2) Industrial parks ten thousand (10,000) square feet or more of surface area;

(3) Commercial malls ten thousand (10,000) square feet or more of surface area;

(4) Retail gasoline outlets five thousand (5,000) square feet or more of surface area.

(5) Restaurants (SIC 5812) five thousand (5,000) square feet or more of surface area;

(6) Parking lots five thousand (5,000) square feet or more of impervious surface area, or with twenty-five (25) or more parking spaces;

(7) Street and road construction of ten thousand (10,000) square feet or more of surface area shall follow the City of Pomona Green Street Policy to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects;

(8) Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with five thousand (5,000) square feet or more of surface area;

(9) New development projects located in or directly adjacent to, or discharging directly to the proposed Significant Ecological Area ("SEA") which will:

   (a) discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

   (b) create two thousand five hundred (2,500) square feet or more of impervious surface area; and

(10) Redevelopment Projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below;

(11) Redevelopment projects located in or within 200 ft. of, or discharging directly to a Significant Ecological Area (SEA) where the development will:

(a) Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

(b) Create 2,500 square feet or more of impervious surface area.

(12) Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

(a) Conserve natural areas.

(b) Protect slopes and channels.

(c) Provide storm drain system stenciling and signage.

(d) Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

(e) Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Article for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) Land disturbing activity that results in the creation or addition or replacement of five thousand (5,000) square feet or more of impervious surface area on an already developed site.

(2) Redevelopment project that result in an alteration to more than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

(3) Redevelopment project that result in an alteration of less than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire project site.

(4) Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

(5) Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace Ten Thousand (10,000) square feet of impervious surface area.

Sec. 74-315. Project Performance Criteria.

All development projects that fit the project criteria listed above in Section 74-331 of this Article shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) (as defined in definitions) on-site through:

(1) Minimizing the impervious surface area; and

(2) Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

Sec 74-316. Alternative Compliance for Technical Infeasibility.

(a) To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain one hundred percent (100%) of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and the compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

(b) When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use. Alternative compliance measures include the following:

(1) On-Site Biofiltration. Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the

portion of the SWQDv that is not reliably retained on site, as calculated by Equation 1 below:

Equation 1:
Bv=1.5* [SWQDv-Rv)
Where:
Bv = Biofiltraton volume
SWQDv= the stormwater runoff from a 0.75 inch, 24-hour storm or the 85^{th} percentile storm, whichever is greater
Rv=volume reliably retained on-site

(2) Off-site Infiltration. Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume or stormwater runoff reliably retained on-site, at an approved offsite project. The required off-site mitigation volume shall be calculated by Equation 2 below:

Equation 2:
Mv=1.0*[SWQDv-Rv]
Where:
Mv=Mitigation Volume
SWQDv=Runoff from the 0.75 inch, 24-hour storm event or the 85^{th} percentile storm, whichever is greater
Rv=the volume of stormwater runoff reliably retained on-site

(3) Offsite Project. Retrofit existing Development. Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable of higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof.

(4) Other alternative compliance requirements are detailed in the Los Angeles County Municipal Stormwater Permit Order No. R4-2012-0175.

(c) Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles Municipal Storm Water Permit Order N. R4-2012-0175, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof.

Secs. 74-317 – 74-330. Reserved.

DIVISION 4. PLAN REVIEW REQUIREMENTS, FEES, AND MAINTENANCE

Sec. 74-331. Review Procedures.

(a) All stormwater plans shall be subject to review and approval by the City Engineer.

(1) If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding a recommendation or approval, and will state the changes necessary to obtain approval.

(2) If Staff determines that all of the required information has not been received, the proprietor may request additional time to allow for the submittal of the required information.

(3) If all of the required information has been received, Staff shall recommend approval, recommend approval with conditions, or recommend denial of the Stormwater Plan.

(a) If the Plan is approved, the City will require the following:

(1) The applicant will provide copies of all necessary state, federal, or local permits relating to the Project for Stormwater Management to the City.

(2) A satisfactory Maintenance Covenant Agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The Maintenance Covenant shall include a listing of the BMPs, locations, and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain records for a period of two (2) years. Maintenance Agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk prior to issuance of occupancy.

(3) A satisfactory Maintenance Covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred, and either:

- A signed statement from the public entity assuming responsibility for BMP maintenance; or
- Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or
- Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association (HOA). Residential development with HOAs shall include a Stormwater Pollution Prevention Plan and compliance elements in the CCRs.

Sec. 74-332. Review Fees.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of Pomona including the costs of on-site inspections.

Sec. 74-333. Maintenance Agreement Required.

(a) Maintenance Agreement Required. A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles County Municipal Storm Water Permit No. R-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

(b) Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

(c) Maintenance Agreement Provisions:

(1) The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPS, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the Maintenance Agreement Plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement Plan shall be provided by the party responsible for maintenance to the City of Pomona at least 14 days in advance of commencing work.

(2) The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMPs.

(3) If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Article and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 18 of the Municipal Code.

(d) A fully executed “Maintenance Covenant for Permanent BMPs Requirements” shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMPs

for post construction. The information to be provided on this exhibit shall include, but not be limited to:

- 8 ½”x11” exhibits with record property owner information.
- Types of BMPs (i.e., site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.
- Clear depicting of location of BMPs, especially those located below ground.
- A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.
- Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.
- Understanding the documentation of proper maintenance must be presented to the City upon request.

Secs. 74-334 – 74.340. Reserved.

DIVISION 5. ENFORCEMENT

Sec. 74-341. Violations.

Any person violating any provisions of this Article shall be responsible for a municipal civil infraction and subject to the City’s progressive enforcement policy as detailed in the City Code.

Sec. 74-342. Stop Work Order.

Where there is work in progress that causes or contributes in whole or in part, a violation of any provision of this Article, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Article or to avoid or reduce the effects of non-compliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

Sec. 74-343. Failure to Comply.

In addition to any other remedies, should any owner fail to comply with the provisions of this Article, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

Sec. 74-344. Emergency Measures.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health, and welfare, and/or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Article, and shall promptly reimburse the City for all such costs.

Sec.74-345. Cost Recovery for Damage to Storm Drain System.

A discharger shall be liable for all costs incurred by the City as a result of causing a discharge that produces a deposit or obstruction, or causes damage to or impairs a storm drain, or water quality violation, or violates any of the provisions of this Article. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles and Santa Ana Regional Water Quality Control Boards for violation of an NPDES Permit, attorney fees, and other costs and expenses.

Secs. 74-346 – 74-360. Reserved.

SECTION 2. Any provision of the Pomona City Code that is inconsistent with the provisions of this Ordinance, to the extent of such inconsistencies and no further, are modified to the extent necessary to affect the provisions of this Ordinance.

SECTION 3. If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council of the City of Pomona hereby declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase or portion thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases, or portions be declared invalid or unconstitutional.

SECTION 4. The City Clerk shall certify to the passage and adoption of this ordinance, causing it to be posted as required by law, and it shall be effective thirty (30) days after its adoption.

APPROVED, PASSED AND ADOPTED this 2nd day of June, 2014.

ATTEST: CITY OF POMONA

____________________________ ____________________________

Eva M. Buice, City Clerk Elliott Rothman, Mayor

APPROVED AS TO FORM:

____
Arnold M. Alvarez-Glasman, City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)
CITY OF POMONA)

I, Eva M. Buice, CITY CLERK of the City of Pomona do hereby certify that the foregoing Ordinance was introduced for first reading on _______, 2014 and adopted at second reading at a regular meeting of the City Council of the City of Pomona held on the ___ of ______, 2014 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:
ABSTAIN: COUNCILMEMBERS:

____
Eva M. Buice, MMC City Clerk

RB-AR3535

14. The City Council introduced, at first reading, **Ordinance No. 4185** of the City of Pomona, California, approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID) Ordinance and adoption of Resolution establishing a Green Street Policy **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL, OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS

DISCUSSION CALENDAR

15. The City Council approved findings of Public Benefit to the Community at Large for the following expenditures: **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY MAYOR ROTHMAN, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

A) $2900 to the City of Pomona Community Services Department for rental of the City stage and other costs associated with the annual Relay for Life Event

B) $100 to Garey High School in support of the ROTC Program

C) $200 to the Pomona Police Department in support of the G.R.E.A.T. Program

D) $125 to the Pomona Concert Band in support of program expenses

E) $75 to the Salvation Army in support of the Release Time Education Program

F) Amount to be determined to Saint Madeleine's Church for expenses associated with their Annual Fiesta

G) Amount to be determined to the Pomona Police Department in support of the Annual Campout

H) Amount to be determined for the Holiday Toy Drive

I) Amount to be determined to Pomona Heritage in support of the Home Restoration Workshop

J) Amount to be determined to The Kiwanis Club of Pomona in support of June 8th Car Show event

K) Amount to be determined to the Pomona Youth Orchestra for sound equipment and miscellaneous program expenses

16. The City Council discussed a proposed moratorium and considered creating a Task Force for review of Waste and Recycling facilities Correspondence from Clean & Green Pomona, and Inland Communities Organizing Network was received on May 19th and a copy was provided to each of you on the dais. **MOTION BY COUNCILMEMBER LANTZ, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT) that the item be returned for discussion and directed Staff with recommendations: 2) Prepare an Urgency Ordinance declaring a moratorium on new or the expansion of existing waste and recycling facilities for City Council consideration at an upcoming City Council meeting. 3) Establish a task force to examine the public health, safety, and cost of service issues at waste-related and recycling facilities and provide direction on how to staff the task force; the City Council also noted that other businesses will not be considered and that the two existing businesses will be considered until the moratorium is lifted.**

RESOLUTION NO. 2014-57

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

RESOLUTION NO. 2014-58

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM EXCLUSIVELY FOR MANUFACTURED HOUSING; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

5. The City Council adopted, at second reading, Ordinance No. 4185 approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID). **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

6. The City Council approved an agreement extension with InfoSend, Inc. for a period of up to nine (9) months, in an amount not to exceed $26,000 plus actual postage costs for the printing, posting, mailing, and Electronic Bill Presentment and Payment (EBPP) services for City utility bills. **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

DISCUSSION CALENDAR

7. The City Council made a Finding of Public Benefit to the Community at Large for the following expenditures **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY VICE MAYOR NOLTE, CARRIED 7-0**:

   A) Amount to be determined to the Learning Centers at the Fairplex in support of the Fair Kids Yellow Bus Program

   B) Amount to be determined to the Pomona Economic Opportunity Center (PEOC) in support of the "Support the Struggle" fundraiser

   C) Amount to be determined to the Pomona Unified Partners in Education (PUPIL) Foundation in support of the Scholarship luncheon

   D) Amount to be determined to Junior Foundation Charities for their fundraiser event

Green Streets Policy

Purpose

The City of San Dimas (City) shall implement green street Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of San Dimas shall require that new public and private street and road construction of 10,000 square feet or more of impervious surface area and street and road redevelopment that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site consider green street strategies. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of San Dimas shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Best Management Practices (BMPs). The City of San Dimas shall require projects subject to this policy, to include, but not limited to appropriate BMPs as listed below to the maximum extent practicable:

- Planter/tree boxes
- Tree canopy rain interception
- Implementation of alternative street widths
- Infiltration
- Permeable pavement
- Bioswales
- Vegetated curb extensions
- Recycled Asphalt

Additional BMPs are available in the Los Angeles County Low Impact Development (LID) Standards Manual.

D. Retrofit Scope. The City of San Dimas shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of San Dimas shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 1231

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SAN DIMAS APPROVING LOW IMPACT DEVELOPMENT REQUIREMENTS IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

THE CITY COUNCIL OF THE CITY OF SAN DIMAS DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 14 of the San Dimas Waters and Sewers Code are hereby amended as set forth in attached Exhibit A.

SECTION 2. This Ordinance shall take effect 30 days after its final passage, and within 15 days after its passage the City Clerk shall cause it to be published in the Inland Valley Daily Bulletin, a newspaper of general circulation in the City of San Dimas hereby designated for that purpose.

PASSED, APPROVED AND ADOPTED THIS 24th DAY OF JUNE, 2014.

Curtis W. Morris

Curtis W. Morris, Mayor of the City of San Dimas

ATTEST:

Ken Duran

Ken Duran, City Clerk

I, Ken Duran, City Clerk of the City of San Dimas, do hereby certify that **Ordinance No. 1231** was regularly introduced at the regular meeting of the City Council on June 10th, 2014 and was thereafter adopted and passed at the regular meeting of the City Council held on June 24th, 2014 by the following vote:

AYES:	Badar, Bertone, Templeman, Morris
NOES:	None
ABSENT:	Ebiner
ABSTAIN:	None

I, Ken Duran, City Clerk further certify that within 15 days of the date of its passage, I caused a copy of Ordinance No. 1231 to be published in the Inland Valley Daily Bulletin.

Ken Duran

Ken Duran, City Clerk

EXHIBIT A

Chapter 14.13 Low Impact Development Ordinance No. 1231

Sections:

14.13.010 Title

This Chapter shall be known as the "City of San Dimas Low Impact Development (LID) Ordinance" and may be so cited.

14.13.020 Purpose

It is the purpose of this Chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts from stormwater runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking

lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs), (including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs.

F. Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

1. On-site infiltration, bioretention and/or rainfall harvest and use.

2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

14.13.030 Findings

The City of San Dimas (hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this Chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

14.13.040 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this Chapter are complex in nature. Effort has been made to simplify terms to the extent the subject matter permits.

14.13.050 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City of San Dimas to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City of San Dimas Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharging directly to a Significant Ecological Area (SEA), such as: San Dimas Canyon / San Antonio Wash where the development will:

a. Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

11. Single-family hillside homes. During the construction of a single family hillside home, the following measures shall be considered to the maximum extent practicable:

a. Conserve natural areas.

b. Protect slopes and channels.

c. Provide storm drain system stenciling and signage.

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

e. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been not subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

14.13.060 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 14.13.050 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume ($SWQD_v$) on-site through:

1. Minimizing the impervious surface area; and

2. Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

14.13.070 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the $SWQD_v$ on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the $SWQD_v$ that is not reliably retained on-site, as calculated by Equation 1 below:

Equation 1:
$B_v = 1.5 * [SWQD_v – R_v]$

Where:

B_v = biofiltration volume

$SWQD_v$ = the stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater.

R_v = volume reliably retained on-site

B. Offsite Infiltration – Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the $SWQD_v$, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:
$M_v = 1.0 * [SWQD_v – R_v]$

Where:

M_v = mitigation volume

$SWQD_v$ = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

R_v = the volume of storm water runoff reliably retained on-site.

C. Offsite Project - Retrofit Existing Development – Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

14.13.080 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If Staff determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, Staff shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

4. If the plan is approved, the City will require the following:

a. The applicant shall provide copies of all necessary state, federal, or local permits relating to stormwater management to the City.

b. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with

the Los Angeles County Recorder prior to issuance of occupancy.

c. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either:

i. A signed statement from the public entity assuming responsibility for BMP maintenance; or

ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or

iii. Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association; or

d. The applicant shall post cash or a letter of credit in an amount not less than 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

e. This deposit shall be returned to the applicant (in the case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

f. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm drains and stormwater BMPs shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of San Dimas including the costs of on-site inspections, as set forth by resolution of the City Council.

14.13.100 Maintenance Agreement

A. Purpose of Maintenance Agreement

The purpose of the maintenance agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

B. Maintenance Agreement Required

1. A maintenance agreement shall be submitted to the City, for review by the City Engineer and his/her designee and, if necessary, City Attorney. The Designers may

select any combination of stormwater BMPs which meet the performance standards provided this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal maintenance plan shall be included in the maintenance agreement.

C. Maintenance Agreement Provisions

1. The maintenance agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPs, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance shall be provided by the party responsible for maintenance to the City of San Dimas at least 14 days in advance of commencing work.

2. The maintenance agreement shall be binding on all subsequent owners of land served by the stormwater BMPs.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved maintenance agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 8.16 of the San Dimas Municipal Code.

4. A fully executed "Maintenance Covenant for permanent BMP's Requirements" shall be recorded with the L.A. County Registrar/Recorder and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include an exhibit that details the installed treatment control devices as well as any site design or source control Best Management Practices (BMPs) for post construction. The information to be provided on this exhibit shall include, but not be limited to:

a. 8 ½" x 11" exhibits with record property owner information.

b. Types of BMPs (i.e., site design, source control and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.

c. Clear depiction of location of BMPs, especially those located below ground.

d. A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.

e. Agreement to retain documentation of proper maintenance for a period of two (2) years.

f. Understanding that documentation of proper maintenance must be presented to the City upon request.

14.13.110 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provisions of Chapter 1 and/or Chapter 8.16 of the San Dimas Municipal Code.

14.13.120 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

14.13.130 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/ or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all of such costs.

14.13.150 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this Chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

June 2014

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

DRAFT Coordinated Integrated Monitoring Program (CIMP)

Prepared by

East San Gabriel Valley Watershed Management Group

(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

Executive Summary

The East San Gabriel Valley Watershed Management Group (ESGV Group) is comprised of the Cities of Claremont, La Verne, Pomona, and San Dimas (Group Members). Group Members started meeting in early 2013 to collaboratively develop a Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) for the East San Gabriel Valley Watershed.

The WMP and CIMP fulfill requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175 (Permit). The Permit was adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) November 8, 2012, and became effective December 28, 2012. The CIMP is the Group Members approach to meeting the Monitoring and Reporting Program (MRP) requirements of the Permit.

The CIMP is designed to provide the information necessary to guide management decisions in addition to providing a means to measure compliance with the Permit. The CIMP is composed of five elements:

1. Receiving Water Monitoring
2. Stormwater Outfall Monitoring
3. Non-Stormwater Outfall Assessment and Monitoring
4. New Development/Redevelopment Effectiveness Tracking
5. Regional Studies

Semi-annual analytical data reports and annual monitoring reports will be submitted as outlined in the MRP. The annual monitoring reports will cover the monitoring period of July 1 through June 30.

The WMP, containing customized strategies, control measures, and best management practices (BMPs) for the ESGV Group will be presented in a separate document according to the Permit schedule.

RECEIVING WATER MONITORING

Receiving water monitoring is designed to assess whether water quality objectives are being met in water bodies and if beneficial uses are being supported. The Group Members propose two types of receiving water monitoring:

- **Long-Term Assessment** – Long-Term Assessment (LTA) monitoring is intended to determine if receiving water limitations (RWLs) are achieved, assess trends in pollutant

concentrations over time, and to determine whether designated uses are supported. LTA sites include:

- Live Oak Wash at the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash.

- **TMDL** – TMDL monitoring is conducted to evaluate attainment of or progress in attaining the WLAs. TMDL sites include:
  - San Jose Creek Reach 1 at the downstream intersection with the WMP Boundary.
  - San Dimas Wash at the intersection with the WMP Boundary.
  - Walnut Creek Wash at the intersection with the WMP Boundary (optional site, triggered by ESGV Group if determining WMP area contribution is necessary.)

In addition, the Group Members will be coordinating receiving water monitoring with other watershed management program groups in the San Gabriel River Watershed and the Los Angeles County Sanitation Districts to share monitoring data in the San Gabriel River Watershed Management Area. The Group Members may use the data in evaluating its progress in meeting the goals and requirements of the Permit.

STORMWATER OUTFALL MONITORING

Stormwater outfall monitoring is intended for determining if a Group Member's MS4 system is causing or contributing to water quality issues observed in the receiving water. The Group Members proposes three stormwater outfall monitoring sites, one for each subwatersheds defined by the hydrologic unit code-12 (HUC-12s) for the ESGV Group. The monitoring sites were selected to be representative of the land uses for each HUC-12. Monitoring will be conducted during three events at each stormwater outfall monitoring site for the monitoring requirements of the waterbody to which they discharge, as well as downstream water bodies. Monitoring at these outfall sites will be used to assess compliance with water quality based effluent limitations (WQBELs), TMDL WLAs, and whether the MS4 may be causing or contributing to observed exceedances of RWLs. Monitoring of Puddingstone Reservoir will be conducted by the County of Los Angeles (County) under a separate program.

NON-STORMWATER OUTFALL SCREENING AND MONITORING

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges from major outfalls to receiving waters. The program serves to provide an assessment on whether non-stormwater discharges are potentially impacting the receiving water and whether significant non-stormwater discharges are allowable. The screening process will begin summer 2014. Visual observations gathered from the screening events, such as size, estimated flow, flow characteristics, and receiving water conditions, will be used to determine and prioritize

significant non-stormwater discharges. In the order of prioritization, sources will be investigated, and monitoring sites will be determined. Monitored parameters will depend upon the receiving water on which the non-stormwater outfall site it is located.

NEW DEVELOPMENT/RE-DEVELOPMENT EFFECTIVENESS TRACKING

Group Members maintain databases tracking information related to new and redevelopment projects subject to the minimum control measures (MCMs). The collected information will be used to assess the effectiveness of the low impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction. The CIMP provides general details on the requirements and approaches related to the new and redevelopment tracking requirements. Group Members will each modify the general requirements as appropriate to reflect their own jurisdictional specific practices.

REGIONAL STUDIES

Only one regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The MRP states that each Group Members shall be responsible for supporting the monitoring described at the sites falling within their jurisdictional boundaries. The Los Angeles County Flood Control District (LACFCD) will continue its participation in the SMC regional bioassessment monitoring program providing the Permit required funding on behalf of the Group Members.

ADAPTIVE MANAGEMENT

Historically, monitoring was not performed in the WMP area receiving waters prior to the implementation of the CIMP. Therefore, the monitoring specified in the CIMP will be dynamic. Defined triggers are included in the CIMP for adding constituents to the monitoring program or removing them if they no longer pose water quality issues. The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. Monitoring data from the CIMP will tie into the WMP by providing feedback on water quality changes resulting from control measures implemented by the Group Members.

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LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
BPA	Basin Plan Amendment
CCW	Calleguas Creek Watershed
CEDEN	California Environmental Data Exchange Network
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
COC	Chain of Custody
COV	Coefficient of Variance
CRAM	California Rapid Assessment Method
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
DAP	Discharge Assessment Plan
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
EIA	Effective Impervious Area
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
GWQC	General Water Quality Constituents
HRMS	High Resolution Mass Spectrometry
HUC	Hydrologic Unit Code
IC/ID	Illicit Connection/Illicit Discharge
IMP	Integrated Monitoring Program
IWC	In-Stream Waste Concentration
LA	Los Angeles
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation Districts
LCS	Laboratory Control Sample/Standard
LSGR	Lower San Gabriel River
LTA	Long-Term Assessment
MAL	Municipal Action Level
MDL	Minimum Detection Limit

mg/L	Milligram per Liter
µg/L	Microgram per Liter
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NAL	Non-stormwater Action Levels
NELAP	National Environmental Laboratory Accreditation Program
NPDES	National Pollutant Discharge Elimination System
NSW	Non-Stormwater
NTU	Nephelometric Turbidity Unit
OC	Organochlorine
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
RPD	Relative Percent Difference
RW	Receiving Water
RWL	Receiving Water Limitation
SCCWRP	Southern California Coastal Water Research Project
SGRRMP	San Gabriel River Regional Monitoring Program
SMC	Stormwater Monitoring Coalition
SQO	Sediment Quality Objectives
SSA	Special Study Assessment
SSC	Suspended Sediment Concentration
SW	Stormwater
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TST	Test of Significant Toxicity
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WBPC	Water Body-Pollutant Combination

WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQS	Water Quality Standard

1 Introduction

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) was adopted November 8, 2012, by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in the County of Los Angeles (County) are not causing or contributing to exceedances of water quality objectives set to protect the beneficial uses in the receiving waters. Included as Attachment E to the Permit are requirements for a Monitoring and Reporting Program (MRP). The stated primary objectives for the MRP, listed in Part II.A.1 of the MRP, as follows:

1. Assess the chemical, physical, and biological impacts of discharges from the MS4 on receiving waters.
2. Assess compliance with receiving water limitations (RWL) and water quality-based effluent limitations (WQBELs) established to implement Total Maximum Daily Load (TMDL) wet weather and dry weather wasteload allocations (WLAs).
3. Characterize pollutant loads in MS4 discharges.
4. Identify sources of pollutants in MS4 discharges.
5. Measure and improve the effectiveness of pollutant controls implemented under the Permit.

Group Members have the option to develop a Coordinated Integrated Monitoring Program (CIMP) to specify alternative approaches for meeting the primary objectives of the MRP. Additionally, the CIMP is the vehicle to modify TMDL monitoring requirements and other historical monitoring program requirements, to unify efforts on a watershed scale, and provide consistent and comparable water quality observations throughout the watershed. Modifications to the MRP or TMDL monitoring requirements must satisfy the primary objectives and require sufficient justification to allow the changes. The Regional Board Executive Officer (EO) will provide final approval of the CIMP. The attachments and appendices to this CIMP describe additional background information and detail specific analytical and monitoring procedures that will be used to implement this CIMP. The CIMP meets the requirements of the MS4 Permit, including TMDL monitoring requirements.

1.1 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT PLAN AREA

The San Gabriel River receives drainage from a 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek.

The WMP area is located in the upper east portion of the San Gabriel River Valley. Water bodies within the WMP area include:

- San Dimas Wash;
- Puddingstone Channel;
- Marshall Creek;
- Live Oak Wash;
- Thompson Wash;
- San Jose Creek;
- Chino Creek;
- San Antonio Creek;
- Walnut Creek Wash; and
- Puddingstone Reservoir.

Receiving waters downstream of the WMP area include:

- Santa Ana River;
- Big Dalton Wash;
- San Gabriel River Reach 1, 2, and 3; and
- San Gabriel Estuary.

The geology of the San Gabriel River Valley provides rapid infiltration of water. During dry weather, the upper watershed is likely to be hydraulically disconnected from the lower watershed. A goal of the monitoring in the CIMP will be to establish when the WMP area is hydraulically connected to the downstream water bodies. If there is no flow to the downstream areas, the discharges in the WMP area cannot possibly be causing or contributing to the downstream water quality impairments. Water quality data for the receiving waters in the WMP area are sparse. Future monitoring results will allow the evaluation of whether MS4 discharges are causing or contributing to water quality objective exceedances in receiving waters in the WMP area.

The ESGV Group WMP area is displayed on **Figure 1-1** along with the named water bodies. Size and land uses for the Group Members are listed in **Table 1-1**. Because a portion of the Angeles National Forest and other open spaces overlap the Group Member jurisdictions, not all areas in each jurisdiction are serviced by the MS4 system. For purposes of the CIMP, the areas of or similar to the national forest are excluded from consideration. The areas serviced by the MS4 system for the Group Members and the land use break downs are presented as **Table 1-2**.

The Cities of Claremont and Pomona are addressing the monitoring requirements established in the Middle Santa Ana River Watershed Bacteria Indicator TMDL (Bacteria TMDL) under a separate program, as they are the only members of the group subject to those requirements. Links to the Santa Ana River Bacteria TMDL Comprehensive Bacteria Reduction Plans for the cities of Claremont and Pomona are included as **Attachment A**.

Figure 1-1.
Water Bodies and Geographic Boundary of the ESGV Group

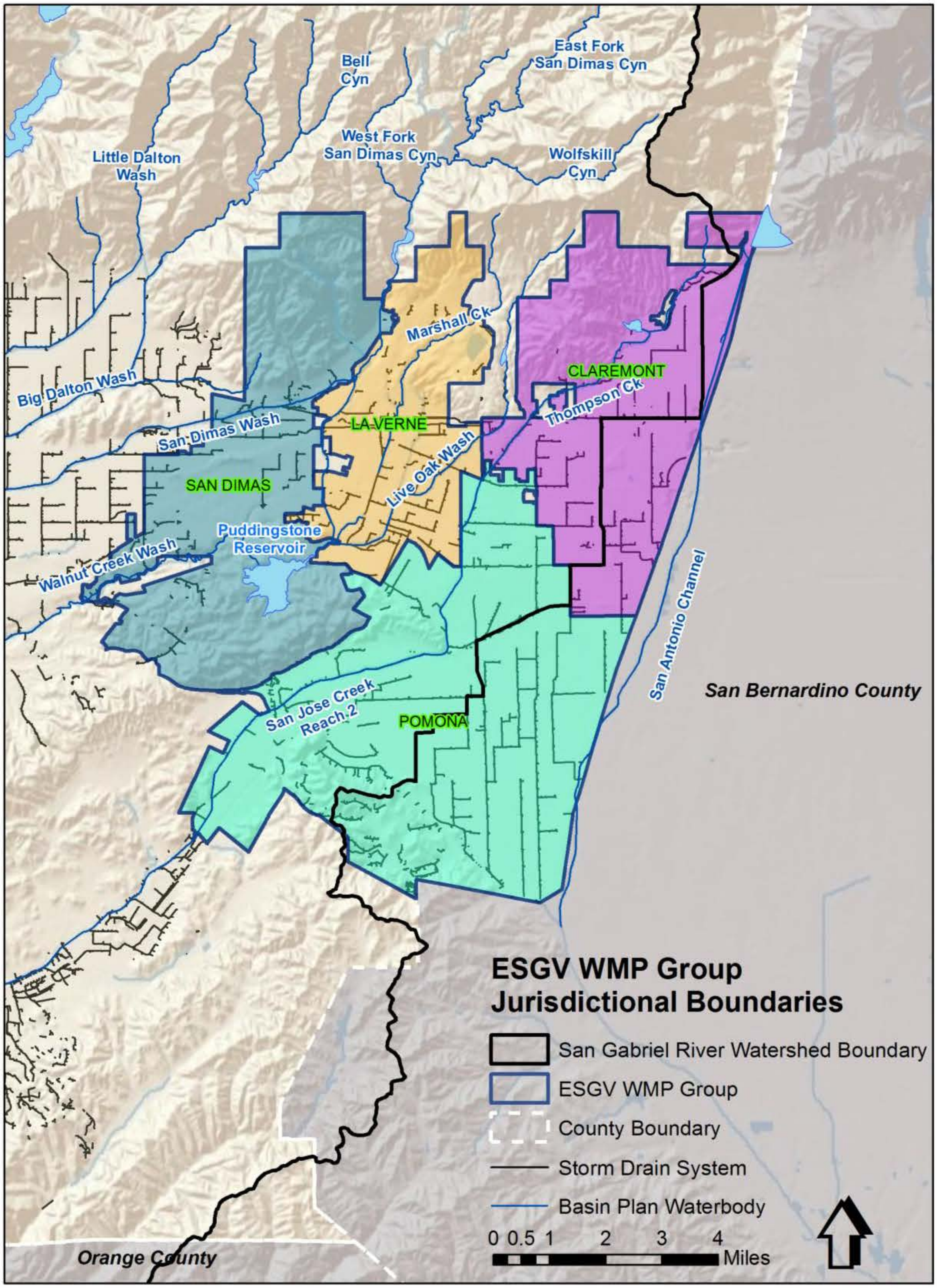

Table 1-1.
List of Group Members with land use summaries within jurisdictional boundaries

Group Members	Area (square miles)	Percent of Land Area(1)			
		Res	Com/Ind	Ag/Nur	Open
Claremont	13.0	40	15	<1	45
La Verne	6.3	65	25	2	8
Pomona	21.9	51	34	2	13
San Dimas	14.3	32	9	1	58
All Cities	55.5	45	22	1	32

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the total area considered in the WMP and not just the area covered by the MS4 system.

Table 1-2.
List of Group Members with land use summaries within jurisdictional boundaries

Group Members	Area (square miles)	Percent of Land Area(1)			
		Res	Com/Ind	Ag/Nur	Open
Claremont	9	56	23	1	20
La Verne	6	65	27	2	6
Pomona	21	54	40	2	4
San Dimas	10	47	19	2	32
All Cities	46	54	30	2	13

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to area covered by the MS4 system.

1.2 WATER QUALITY PRIORITIES

As part of the WMP development, the available data were analyzed to determine water quality priorities for the watershed. Water quality priorities are based on TMDLs, State Water Resources Control Board (SWRCB) 2010 303(d) List of Impaired Water Bodies (303(d) List), and monitoring data. Based on available information and data analysis, water body-pollutant combinations (WBPCs) were classified in one of the three Permit-defined categories, as described in **Table 1-3**.

The Permit categories are utilized in this CIMP to identify parameters that will be monitored at each receiving water and outfall monitoring site. Since the analysis is waterbody specific, different parameters may be monitored at different monitoring sites.

Table 1-3.
Water Body Pollutant Combination Categories

Category	Water Body-Pollutant Combinations (WBPCs) Included
1	WBPCs for which TMDL effluent or receiving water limitations are established in Part VI.E and Attachments P of the MS4 Permit.
2	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List and for which the MS4 discharges may be causing or contributing.
3	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

1.2.1 Category 1 Constituents

Three TMDLs are applicable to the ESGV Group and include the Dominguez channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbor Toxics TMDL), the San Gabriel River Metals TMDL (Metals TMDL), and the Los Angeles Area Lakes TMDLs for Puddingstone Reservoir (Puddingstone Reservoir TMDLs). The applicable TMDLs are also listed in **Table 1-4.**

Because the San Gabriel River Metals and the Puddingstone Reservoir TMDLs have both wet and dry weather WLAs allocations applied as grouped allocations, the combined loading from all upstream tributaries must meet the allocations at the listed reaches. Monitoring will be necessary to identify the contribution to the loads from the WMP area. The Regional Board adopted a Basin Plan Amendment (BPA) incorporating an implementation plan and schedule on June 6, 2013. The adopted BPA contains general requirements for ambient Monitoring and TMDL effectiveness monitoring. However, very specific requirements were incorporated into the MRP.

While the Harbors Toxics TMDL was developed to address impairments in (among other water bodies) San Pedro Bay, the Permit links the Harbors Toxics TMDL to the San Gabriel River watershed, requiring monitoring for all responsible parties subject to the Metals TMDL. Monitoring is necessary to identify the contribution to the loads from the San Gabriel River Watershed Management Area (WMA). The ESGV Group is coordinating with downstream groups to provide support for performing the required sampling.

Similar to the Metals TMDL, the Puddingstone Reservoir TMDLs were promulgated by United States Environmental Protection Agency (USEPA), and implementation provisions, including monitoring, were not explicitly required in the TMDLs. Rather, the TMDLs proposed monitoring recommendations. However, very specific requirements were incorporated into the MRP. The County and LACFCD are monitoring the reservoir water column, benthic sediment, and fish tissue. The ESGV Group will monitor the MS4 discharge to the reservoir. Therefore, monitoring to address the Puddingstone Reservoir TMDL will be performed through the coordination of both groups.

Table 1-4.
TMDLs Applicable to the WMP Area

TMDL	Effective Date or EPA Approval Date	Regional Board Resolution Number
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbors Toxics TMDL)	03/23/2012	2011-008
Los Angeles Area Lakes Toxics and Nutrients TMDL for Puddingstone Reservoir (Lakes TMDL)	3/26/2012	None (USEPA TMDL)
San Gabriel River Metals TMDL (Metals TMDL)	03/26/2007	None(1) (USEPA TMDL)

1 Regional Board adopted an implementation Plan for the San Gabriel River Metals TMDL as BPA through resolution R13-004 on June 6, 2013.

1.2.2 Category 2 Constituents

WBPCs on the State Water Resources Control Board's (SWRCB) 2010 Clean Water Act Section 303(d) List that are not already addressed by a TMDL or other action are included as Category 2. All listings within or downstream of the WMP area were identified and included to acknowledge that discharges from upstream reaches could impact the listed area, particularly during wet weather. However, a constituent included in the table does not infer MS4 discharges from the WMP area contribute to the downstream impairment. The 303(d) listed water bodies are presented in **Table 1-5**.

Table 1-5.
Category 2 Water Body-Pollutants for Tributaries in the WMP Area

Constituent	San Gabriel River Reach			San Jose Creek Reach		Walnut Creek Wash	San Gabriel Estuary
	1	2	3	1	2		
Ammonia				O			
Coliform or other Indicator Bacteria	L	L	L	L	L	L	
Cyanide		L					
TDS				L			
Benthic-Macroinvertebrates						L	
Dioxin							L
Low Dissolved Oxygen							L
Nickel							L
pH	L			L		L	
Toxicity				L			

L - Listed on 2010 303(d) list.
O - Listed on the 2010 303(d) list as being addressed through a single regulatory action (NPDES permit for wastewater discharges)

1.2.3 Category 3 Constituents

Monitoring data for sites within the San Gabriel River WMA was received from the following sources:

- Los Angeles County Department of Public Works (LACDPW) provided long-term monitoring data from the San Gabriel River Mass Emission Station (S14.)
- LACDPW provided temporary monitoring data from the Walnut Creek Wash Tributary Site (TS13.)
- LACDPW provided temporary monitoring data from the San Jose Creek Tributary Site (TS15.)
- The Council for Watershed Health provided monitoring data from their monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN.)
- Los Angeles County Sanitation Districts (LACSD) provided long-term receiving water monitoring data.

Available data were compared to the applicable water quality objectives to determine the additional Category 2 and Category 3 constituents, depending on the frequency of exceedances.

Data received from the Council for Watershed Health (CWH) and CEDEN largely consisted of short term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential water quality objective exceedances. The vast majority of the available sites are for receiving waters downstream from the ESGV Group area. Monitoring data specific to the WMP area is lacking. To estimate the potential constituents of concern in the area, data reflective of receiving waters downstream from the WMP area are considered. Implementation of the CIMP and the adaptive management process will allow the assessment of prioritized constituents, removing those from the prioritization where WMP area monitoring reveals they are not water quality issues. Additionally, new constituents found to be water quality issues will be added to the prioritization. The CIMP revision process is detailed in **Section 10**.

1.3 WATER BODY POLLUTANT COMBINATIONS

Where available, the most recent 10 years of data were analyzed to identify WBPCs. Additionally, the last 5 years of data were analyzed to determine if historical issues were abated and to refine the categorization of WBPCs. Subcategories were identified and created to refine the prioritization process. Those pollutants with measurements exceeding water quality objectives are further evaluated and categorized based on the frequency, timing, and magnitude of exceedances. The WBPCs are placed in the respective subcategories in **Table 1-6**. The ESGV Group is monitoring the outfall to Puddingstone Reservoir, while the County and the LACFCD are performing the in-lake monitoring.

Constituents may change subcategories with new information as the monitoring progresses, source investigations occur, and BMP implementation begins. Where exceedances decrease over time, constituents will be reprioritized or removed from the priority list as watershed actions bring prioritized constituents into compliance. For a constituent that is currently not a priority, if the frequency of water quality exceedances increases, then the constituent would be reevaluated using the prioritization procedure, likely increasing the priority. Due to the natural rate of infiltration, the San Gabriel River and some of the tributaries are dry with the exception of storm flows. Future monitoring will be assessed to establish the disconnect between the upper and lower watershed during dry weather and minor storm events. On establishing the disconnection, the corresponding WBPCs flagged due to downstream water quality issues will be adjusted or removed from the categorization.

1.4 PHASED IMPLEMENTATION OF MONITORING

As there are currently no established monitoring sites within the WMP area, it may not be possible to begin monitoring all aspects of the CIMP within 90 days of Regional Board approval. Receiving water and stormwater outfall sites require site planning, equipment purchase, and installation prior to commencing monitoring. Receiving water and outfall monitoring will begin

July 1, 2015, or 90 days after CIMP approval, whichever is later. The Group Members will begin the non-stormwater outfall screening process summer 2014.

Table 1-6.
Summary of San Gabriel River Watershed Water Body-Pollutant Combinations

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Copper (Dry)							I	I	
	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Copper (Dry)							F	F	
	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1	San Jose Creek Reach 2	Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.

3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

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2 Receiving Water Monitoring Program

Receiving water monitoring is designed to provide data to determine whether the RWLs and water quality objectives are being achieved and if beneficial uses are being supported. Over time, the monitoring will allow the assessment of trends in pollutant concentrations. The following subsections describe how the MRP requirements for receiving water monitoring will be met within the WMP area.

2.1 RECEIVING WATER MONITORING OBJECTIVES

The objectives of the receiving water monitoring include the following:

- Determine whether the RWL are being achieved;
- Assess trends in pollutant concentrations over time, or during specified conditions; and
- Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.

The following presents the receiving water monitoring sites, monitoring parameters and frequency, and a discussion on monitoring coordination. A summary of how the receiving water monitoring program meets the objectives of the MRP is discussed further below. The approach builds off the MRP requirements, the TMDL monitoring requirements, as well as existing monitoring programs in the watershed. Implementation of the CIMP will replace existing TMDL monitoring programs and meet the monitoring requirements for TMDLs that had not yet developed monitoring programs (e.g., Harbors Toxics TMDL, San Gabriel River Metals TMDL, etc.). Note that the Harbors Toxics TMDL required the development of a monitoring program and quality assurance project plan (QAPP). This CIMP addresses those requirements. While not all aspects of a QAPP are explicitly addressed herein the primary requirements that are not included relate to the implementation of the CIMP (e.g., definition of project manager, lines of communication, and standard operating procedures). These requirements can be addressed once an agency is selected to lead the implementation of the CIMP.

2.2 DESCRIPTION OF RECEIVING WATER MONITORING

Receiving water monitoring is designed to achieve the objectives listed in the permit based on the category of WBPCs applicable to the site. WBPCs prioritizations were utilized to support the development of the monitoring approach. WBPCs were prioritized, as described in **Section 1**. To address the different monitoring objectives and priorities, two types of monitoring are proposed:

- **Long Term Assessment** (LTA) – monitoring is intended to determine if RWLs are achieved, to assess trends in pollutant concentrations over time, and to determine whether designated uses are supported.
- **TMDL** Receiving Water (TMDL) – monitoring is conducted to evaluate attainment of or progress in attaining the TMDL.

While not explicitly established in the MRP, the monitoring types proposed distinguish between the different end goals of monitoring for specific constituents within specific water bodies in the WMP area. LTA monitoring provides a long term record to understand conditions within the WMP area, for a robust suite of parameters. TMDL monitoring addresses TMDL related constituents. WBPCs on the 303(d) list, or those meeting the listing requirements and have exceeded receiving water objectives, will be monitored at the LTA and appropriate TMDL sites.

The receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP, receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not, on its own, indicate MS4 discharges caused or contributed to the RWL exceedance, as the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges. The exceedance of a RWL may have been caused or contributed to by a non-MS4 source. A determination regarding whether MS4 discharges caused or contributed to a RWL exceedance should be made using data collected through outfall monitoring.

2.3 RECEIVING WATER MONITORING SITES

The MRP requirements include receiving water monitoring sites at previously designated mass emission stations, TMDL receiving water compliance points, and additional receiving water locations representative of the impacts from MS4 discharges. As there are no existing mass emission stations in the WMP area, the ESGV Group will establish a new LTA site representative of the WMP area. The number of required receiving water monitoring sites is not specified in the MRP, however, the tributaries leaving the WMP area are sited for monitoring. Approximate locations of the proposed monitoring sites for the ESGV Group are shown in **Figure 2-1.** A field assessment was conducted and locations were identified based on the field assessments on December 26, 2013, and January 17, 2014. Summaries of the site selection assessments and proposed location photographs are presented in **Attachment B**.

2.3.1 Long Term Assessment Site

The LTA site is located to fulfill one of the primary objectives of receiving water monitoring; to assess trends in pollutant concentrations over time or during specified conditions. As a result, the primary characteristic of an ideal monitoring site is a robust dataset of previously collected monitoring results so that trends in pollutant concentrations over time, or during specified

conditions, can be assessed. A new LTA site was identified to support understanding of potential impacts associated with MS4 discharges from the ESGV Group. The site receives drainage predominantly from La Verne. However, the land use for all four cities for the ESGV Group are similar and therefore will be reflective of the water quality in receiving waters leaving the WMP area.

The proposed LTA site meets the receiving water objectives and supports an understanding of potential impacts associated with MS4 discharges. However, receiving water sites are intended to assess receiving water conditions. An exceedance of a receiving water limitation at a receiving water site does not, on its own, represent an exceedance of a receiving water limitation that was caused by or contributed to by MS4 discharges as these sites also receive runoff from non-MS4 sources, including open space and other permitted discharges.

The LTA monitoring site will be located on Live Oak Wash between the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash; and the discharge into Puddingstone Reservoir. The proposed site is located on **Figure 2-1**. The LTA monitoring site will also be utilized to support TMDL monitoring. Since Live Oak Wash is a soft-bottomed channel and irregularly shaped, flow may be measured within each of Puddingstone Channel, Marshall Creek, and Live Oak Wash and totaled. However, flow will be measured at the located LTA site if a suitable stage-flow rating curve can be developed to determine storm flows without having to enter the channel. Photographs of the LTA site can be found in **Figures 2-2** through **2-4**. Additional photographs and flow monitoring locations evaluated for the LTA site are included in **Attachment A**. Exact placement of the site will be dependent on site engineering constraints.

Figure 2-1.
Overview of Receiving Water Monitoring Sites

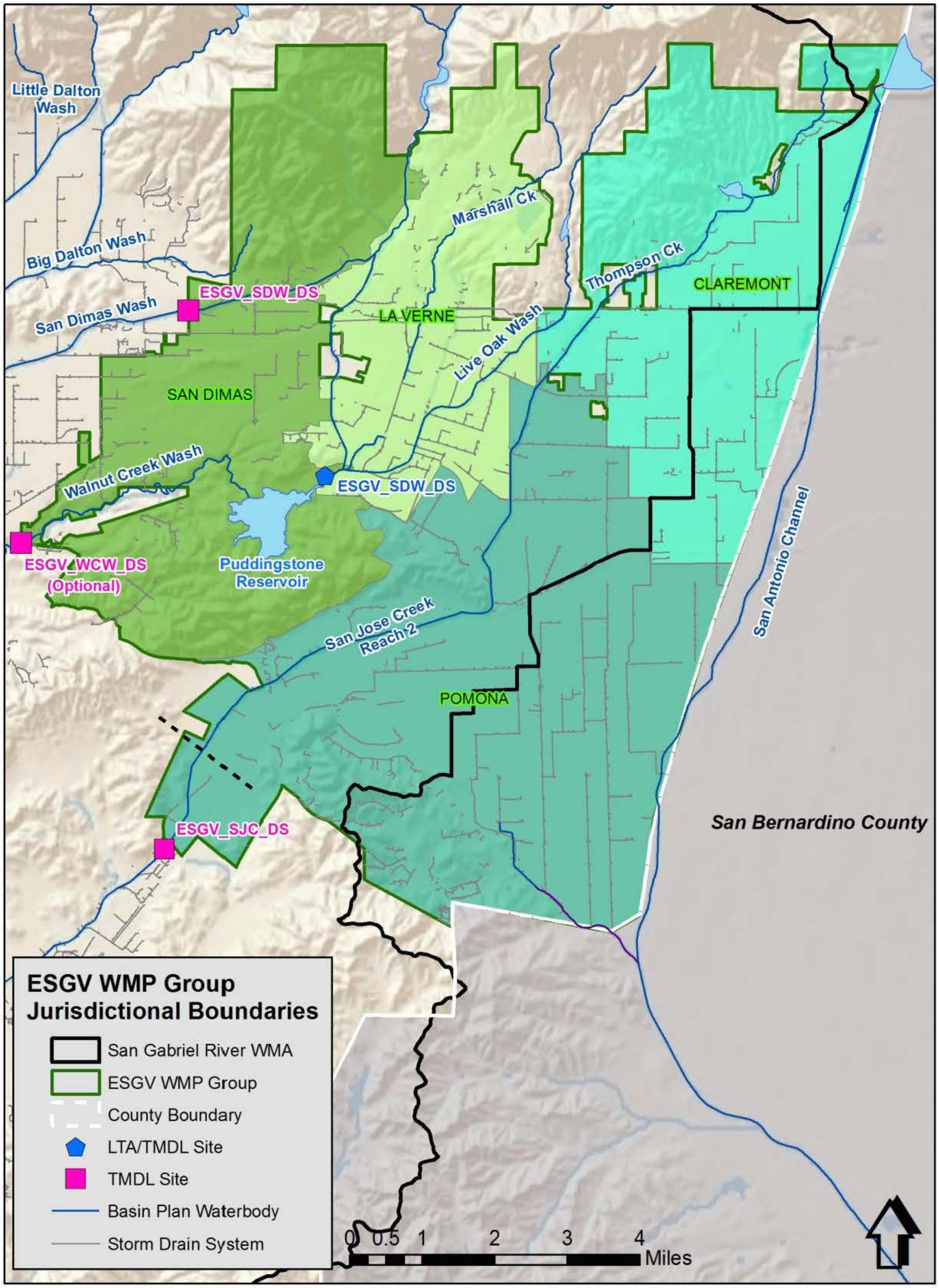


Figure 2-2.
ESGV_LOW_DS Site Looking Upstream in the Soft Bottom Portion of the Channel

Figure 2-3.
ESGV_LOW_DS Site Looking Downstream

Figure 2-4.
Confluence of Channels Discharging to Puddingstone Reservoir at Transition Between Hard and Soft Bottom Channel.

TMDL Sites

Within the WMP area, Metals TMDL monitoring sites are required in San Jose Creek Reaches 1 and 2 and Walnut Creek Wash. Given that San Jose Creek Reach 1 extends for greater than 13 miles and only approximately 1 mile is located within the WMP area, a combined TMDL site will be utilized for San Jose Creek Reaches 1 and 2. The San Jose Creek TMDL site will be located at the downstream intersection of San Jose Creek and the ESGV Group boundary. The proposed sites for the ESGV Group are located on **Figure 2-1**, and are as follows:

- San Jose Creek at the crossing of the Pomona city line (ESGV_SJC_DS.)
- San Dimas Wash at the crossing of the San Dimas city line (ESGV_SDW_DS.)
- Walnut Creek Wash between Puddingstone dam and the extent of San Dimas (ESGV_WCW_DS.)

Given that Puddingstone Reservoir discharges to Walnut Creek Wash, that Puddingstone Reservoir is under the jurisdiction of Los Angeles County, and that lake processes can affect the concentration of constituents in the downstream receiving waters, the ESGV Group is concerned that conducting receiving water monitoring within Walnut Creek Wash would not be representative of the ESGV Group's MS4 discharge. Walnut Creek Wash is proposed as an optional site to be evaluated by the ESGV Group if downstream exceedances are measured and the decision is made to further determine the contribution from the WMP area. As Puddingstone Reservoir is a County park and operated by the LACFCD, the ESGV Group Members will not

monitor within the Lake. The LTA site on Live Oak Wash will also serve to monitor discharges to Puddingstone Reservoir.

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD.

All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed by two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Photographs of the San Jose Creek TMDL site, ESGV_SJC_DS, are included in **Figure 2-5** and **Attachment B**.

Figure 2-5.
San Jose Creek TMDL site ESGV_SJC_DS Looking Upstream

A TMDL monitoring site is located at the intersection of San Dimas Wash and the ESGV Group boundary, indicated as site ESGV_SDW_DS on **Figure 2-1**. Photograph of the San Dimas Wash site are included in **Figure 2-6** and **Attachment B**.

Figure 2-6.
San Dimas Wash TMDL Site, ESGV_SDW_DS, Looking Downstream

An optional TMDL monitoring site is located on Walnut Creek Wash. If the ESGV Group decides to determine the contribution from the WMP area, the site will be triggered. The TMDL monitoring site will be located between the Puddingstone dam and the ESGV Group boundary downstream of N Reeder Street, indicated as site ESGV_WCW_DS on **Figure 2-1**. A photograph of a potential location for ESGV_WCW_DS is presented as **Figure 2-7**.

Figure 2-7.
Walnut Creek Wash TMDL Potential Site Looking Upstream.

2.4 MONITORED PARAMETERS AND FREQUENCY OF MONITORING

The MRP clearly defines the default required parameters and frequency for receiving water monitoring. A general summary of the frequency of monitoring and of parameters identified in the MRP for receiving water monitoring are presented in **Table 2-1**. The program will operate three wet weather events per year, including the first significant rain event of the storm year. Additionally, the program will operate two dry weather events per year, conducted in January and July. However, not all parameters will be monitored each event. The frequency of monitoring for wet and dry events is specified by site in **Table 2-1**. For toxicity, monitoring will be conducted during two wet weather events per year and during the one dry weather event that takes place coincident with the summer dry weather sampling event. The ESGV Group does not have historical flow data to determine base flow conditions within the Group's receiving waters. Therefore, during the first year of monitoring, wet weather conditions will be defined as when greater than 0.25 inches of precipitation has fallen within the previous 24-hour period. Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will be assessed with applicable water quality objectives after the first year of LTA monitoring. Analytical methods, detection limits, sampling methods, and sample handling procedures are detailed in **Attachment D**. In addition, details regarding the collection of quality assurance/quality control (QA/QC) samples are outlined in **Attachment D**.

Metals TMDL ambient monitoring will be conducted at a frequency consistent with the default LTA monitoring of three wet and two dry events. The Metals TMDL specifies four wet weather events annually for effectiveness monitoring. However, to be consistent with the monitoring frequency for other constituents, and stormwater outfall monitoring, effectiveness monitoring within the ESGV WMP area will be conducted on three wet weather events annually.

Table 2-1.
Annual Frequency and Duration of Receiving Water Monitoring During Wet and Dry Weather Conditions

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	San Jose Creek	San Dimas Wash	Walnut Creek Wash
Flow and field parameters(1)	3/2	3/2	3/2	3/2
Table E-2 Pollutants(2)	1(3)/1(3)	(4)	(4)	(4)
Toxicity	2/1			
TSS and Hardness	3/2	3/2	3/2	3/2
Alkalinity	3/2	3/2		
Ammonia	3/2	3/2		
TKN or Organic N, Nitrate, Nitrite, Orthophosphate, and Total Phosphorus	3/0			
TDS, Chloride, and Sulfate	2/2	0/2	0/2	0/2
Mercury	2/2			3/2
Methylmercury	2/0			
TOC	2/0			
Total PCBs(5), Total Chlordane, Dieldrin, and Total DDTs(6)	1(7)/0			
Copper(8)	3/2	3/2	3/2	3/2
Lead(8)	3/2	3/2	3/2	3/2

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	San Jose Creek	San Dimas Wash	Walnut Creek Wash
Zinc(8)	3/2	3/2	3/2	3/2
Selenium		3/2		3/2
E. coli	3/2	3/2	3/2	3/2
Cyanide		3/2		
PAHs(9)		3/2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, and specific conductivity.
2 All pollutants identified in Table E-2 of the MRP that are not otherwise addressed by monitoring at the LTA.
3 Monitoring frequency only applies during the first year of monitoring. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) for its respective test method or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective, additional monitoring will be conducted under condition with observed exceedance (i.e., the monitoring frequency will become 3/2 if exceedances are observed during dry and wet weather, the monitoring frequency will become 3/0 if exceedances are observed during wet weather only, and the monitoring frequency will become 0/2 if exceedances are observed during dry weather only).
4 Pollutants identified for additional monitoring from Table E-2 under condition with observed exceedance in first year. For constituents with no measured exceedances and not otherwise addressed by monitoring at the LTA station, monitoring will discontinue.
5 PCBs includes analyses for all aroclor species when analyzed in water and the following 54 PCB congeners when analyzed in water or suspended solids: 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209
6 DDT is defined as the sum of 2,4’-DDD, 2,4’-DDE, 2,4’-DDT, 4,4’-DDD, 4,4’-DDE, and 4,4’-DDT.
7 Suspended sediment samples will be collected and analyzed for listed parameters, in addition to water column concentrations.
8 Total and dissolved.
9 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

Data collected through monitoring will be reviewed and changes to the constituents and frequencies listed in **Table 2-1** will be discussed in the annual report and implemented starting no later than the first scheduled CIMP event of the next monitoring year, which corresponds to the first applicable event after July 1 following the annual report submittal. The processes for determining appropriate changes to monitoring are listed in **Section 10**.

2.5 MONITORING COORDINATION

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD. All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed through two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Opportunities potentially exist to coordinate with other watershed management groups for receiving water monitoring. The planned coordination to achieve the required Metals TMDL monitoring is an example of the coordination opportunities. The CIMP is written to outline the monitoring requirements to assess the ESGV Group MS4. Coordination with other watershed management groups may occur in the future, where data from other programs may be used to fulfill ESGV Group requirements.

2.6 RECEIVING WATER MONITORING SUMMARY

Three sites are selected in the WMP area to address the receiving water monitoring program objectives. An additional optional site will be triggered by the ESGV Group in the event it becomes necessary to evaluate the potential contribution of constituents from the WMP area to downstream areas. The optional site will be triggered if downstream exceedances are observed for constituents not already being addressed by the WMP area. The receiving water sites are summarized in **Table 2-2**. None of the identified sites have been monitored as part of historical or existing monitoring programs. The County and LACFCD will perform monitoring in Puddingstone Reservoir. Estuary monitoring will be fulfilled by LACSD during dry weather and the Lower San Gabriel River EWMP group during wet weather per the Harbor Toxics TMDL to assess the potential of metals contribution to toxicity.

Table 2-2.
Summary of ESGV Group Receiving Water Monitoring Sites

Site ID	Water Body	Coordinates		Monitoring Type	
		Latitude	Longitude	LTA	TMDL
ESGV_LOW_DS	Live Oak Wash	34.094064	-117.792934	X	X
ESGV_SJC_DS	San Jose Creek	34.032233	-117.824894		X
ESGV_SDW_DS	San Dimas Wash	34.121341	-117.820088		X
ESGV_WCW_DS(1)	Walnut Creek Wash	34.086672	-117.845592		X

1 Optional site to be triggered by the ESGV Group to evaluate contribution of constituents from the WMP area in the event downstream exceedances are observed

A summary of how the ESGV receiving water monitoring program meets the intended objectives of the receiving water monitoring program outlined in Part II.E.1 of the MRP is presented in **Table 2-3**.

Table 2-3.
Summary of Receiving Water Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether the RWLs are being achieved.	○ Four total receiving water monitoring sites. Three planned sites and one optional site. ○ Receiving water monitoring sites located as required by TMDLs. ○ Constituents added for monitoring based on the water quality priorities (i.e., the constituents at the highest risk of exceeding RWLs).
Assess trends in pollutant concentrations over time, or during specified conditions.	○ LTA station will be established within the WMP area. ○ Monitoring during dry weather and wet weather ○ Constituents added for monitoring based on the water quality priorities.
Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.	○ At least one monitoring site located in the majority of water bodies specified in the Basin Plan. ○ Aquatic toxicity monitoring to be conducted during dry and wet weather. ○ Constituents added for monitoring based on the water quality priorities.

3 MS4 Database

The objective of the MS4 database is to geographically link the characteristics of the outfalls within the WMP area with watershed characteristics including: subwatershed, water body, land use, and effective impervious area. The information will be compiled into geographic information systems (GIS) layers.

3.1 PROGRAM OBJECTIVES

A GIS-based database of the MS4 storm drains and outfalls is required as part of the CIMP. The database structure must accommodate the following data fields:

1. Surface water bodies within the ESGV Group
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
4. Effective Impervious Area overlay
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry weather diversions
8. The location of all major MS4 outfalls within the ESGV Group. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually)
10. Storm drain outfall catchment areas for each major outfall within the ESGV Group
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a) Ownership
    b) Coordinates
    c) Physical description
    d) Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    e) Determination of whether the outfall conveys significant non-stormwater discharges.
    f) Stormwater and non-stormwater monitoring data

Available GIS data was reviewed to determine which components were available to populate the database for submittal with the CIMP. Available information includes components 1, 2, 3, 5, 6, 7, and 11.b. For the remaining components (4, 8, 9, 10, 11.a, 11.c, 11.d, 11.e, and 11.f) the ESGV Group will gather the information upon implementation of the non-stormwater outfall screening program in the summer of 2014. All outstanding data will be collected upon

completion of the non-stormwater outfall screening. Based on the review of the GIS data, the components were divided into two categories: (1) available information being submitted with the CIMP, and (2) pending information that will be submitted after completion of the non-stormwater outfall and screening and monitoring program.

3.2 AVAILABLE INFORMATION

The following data are being submitted as a map and/or in a database concurrently with the CIMP (note, the numbering corresponds to the item number in the Permit list):

1 Surface water bodies within the ESGV Group.
2. Sub-watershed (HUC-12) boundaries.
3. Land use overlay.
5. Jurisdictional boundaries.
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes).
7. The location of all dry weather diversions.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    b. Coordinates

3.3 PENDING INFORMATION

Collecting the following data is an ongoing effort. The data are not currently available for submittal with the CIMP. The MS4 database will be populated as the data are collected. As the data are collected the database will be updated. The annual reports will include the updated database. The fields that will be updated through implementation of the CIMP include:

4. Effective impervious area overlay.
8. The location of all major MS4 outfalls within the Group Members' jurisdictional boundary.
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually).
10. Storm drain outfall catchment areas for each major outfall within the Group Member's jurisdiction.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership
    c. Physical description

d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time

e. Determination of whether the outfall conveys significant non-stormwater discharges.

f. Stormwater and non-stormwater monitoring data.

The information necessary to determine pending elements will be generated as an outcome of implementing the non-stormwater outfall program as noted in the **Table 3-1.** footnotes. A schedule for completing each of the elements is provided. As the data become available, they will be entered into the GIS and water quality databases. Each year, the storm drains, channels, outfalls, and associated databases will be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharge. Updates will be included as part of the annual reporting to the Regional Board.

Table 3-1.
MS4 Database Elements to Be Developed

Database Element	To Be Developed	Date of Submission
Effective Impervious Area (EIA) overlay.	---	As Available
Notation of outfalls with significant non-stormwater discharges (to be updated annually).	X(1)	December 2015
Detailed analysis of storm drain outfall catchment areas for any new outfall monitoring locations, outfalls identified as having significant non-stormwater discharges, and outfalls addressed by structural best management practices (BMPs).	X(2)	Ongoing
Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time	X(3)	December 2015
Determination of whether the outfall conveys significant non-stormwater discharges.	X(1)	December 2015
Stormwater and non-stormwater monitoring data	X(4)	Ongoing

1. The determination of significant will be made after the initial screening process outlined in this CIMP is completed.
2. Storm drain outfalls were linked in the database to the modeling subwatersheds to provide information on the contributing areas. Detailed analysis of storm drain outfall catchment areas for the stormwater outfall monitoring sites have been developed and additional detailed analysis for any new outfall monitoring locations, outfalls identified as having significant nonstormwater discharges, and outfalls addressed by structural BMPs will be conducted as needed.
3. These data will be gathered as part of the screening and monitoring program and will be added to the database as they are gathered.
4. These data will be gathered as part of the screening and monitoring program and will be added to a separate water quality database as they are gathered.

4 Stormwater Outfall Monitoring

Stormwater outfall selection and monitoring requirements are discussed below.

4.1 PROGRAM OBJECTIVES

Stormwater outfall monitoring of discharges from the MS4 support meeting three objectives including:

- Determine the quality of stormwater discharge relative to municipal action levels.
- Determine whether stormwater discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs.
- Determine whether the discharge causes or contributes to an exceedance of receiving water limitations.

4.2 STORMWATER OUTFALL MONITORING SITES

The primary criteria for the stormwater outfall monitoring program is selecting monitoring sites that are representative of the range of land uses in the WMA and provide accurate data for measuring flows and characterizing pollutant loads. The Permit provides default requirements for one outfall site per jurisdiction per HUC-12. The HUC-12 equivalent drainage areas are used in the analysis and represent the United States Geological Survey (USGS) HUC-12s modified to account for the MS4 system. The Regional Board approved the HUC-12 equivalent drainages for use in the WMP and CIMP process. The default procedure in the Permit was modified to select one outfall per HUC-12. The Permit allows an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. To facilitate the approval of the outfall selection process, the proposed process is demonstrated to achieve equivalent monitoring in **Attachment E**. The following subsections outline the approach to meet the MS4 Permit requirements related to stormwater outfall monitoring.

There are four HUC-12s within the WMP area that include MS4 serving the Group Members. The San Dimas Wash HUC-12 covers a minor portion of the WMP area and is similar in land use to the neighboring Big Dalton Wash HUC-12. As a result, no stormwater outfall monitoring site will be located in the San Dimas Wash HUC-12. A representation of the WMP area with highlighted HUC-12 areas is presented in **Figure 4-1**. The selected monitoring sites are shown on the Figure. Field verification of the sites was performed on December 26, 2013 and January 17, 2014.

One monitoring site for each of the remaining HUC-12s that include MS4 will be monitored. The three stormwater outfall monitoring sites are presented in **Figure 4-1**. The selected sites are representative of the land uses within each respective HUC-12. The catchment areas for each

selected drain are displayed with land use in **Figure 4-2**. The data collected at the monitored outfalls will be considered representative of all MS4 discharge within the respective HUC-12. The resulting data will be applied to all Group Members represented by the site, regardless of whether a site is located within a particular jurisdiction or received flow from that land area. Compliance for Group Members with WQBELs and RWLs may be based on comingled discharges or data not collected within an individual jurisdiction.

Figure 4-1.
HUC-12 Drainage Areas Corresponding to the WMP Area.

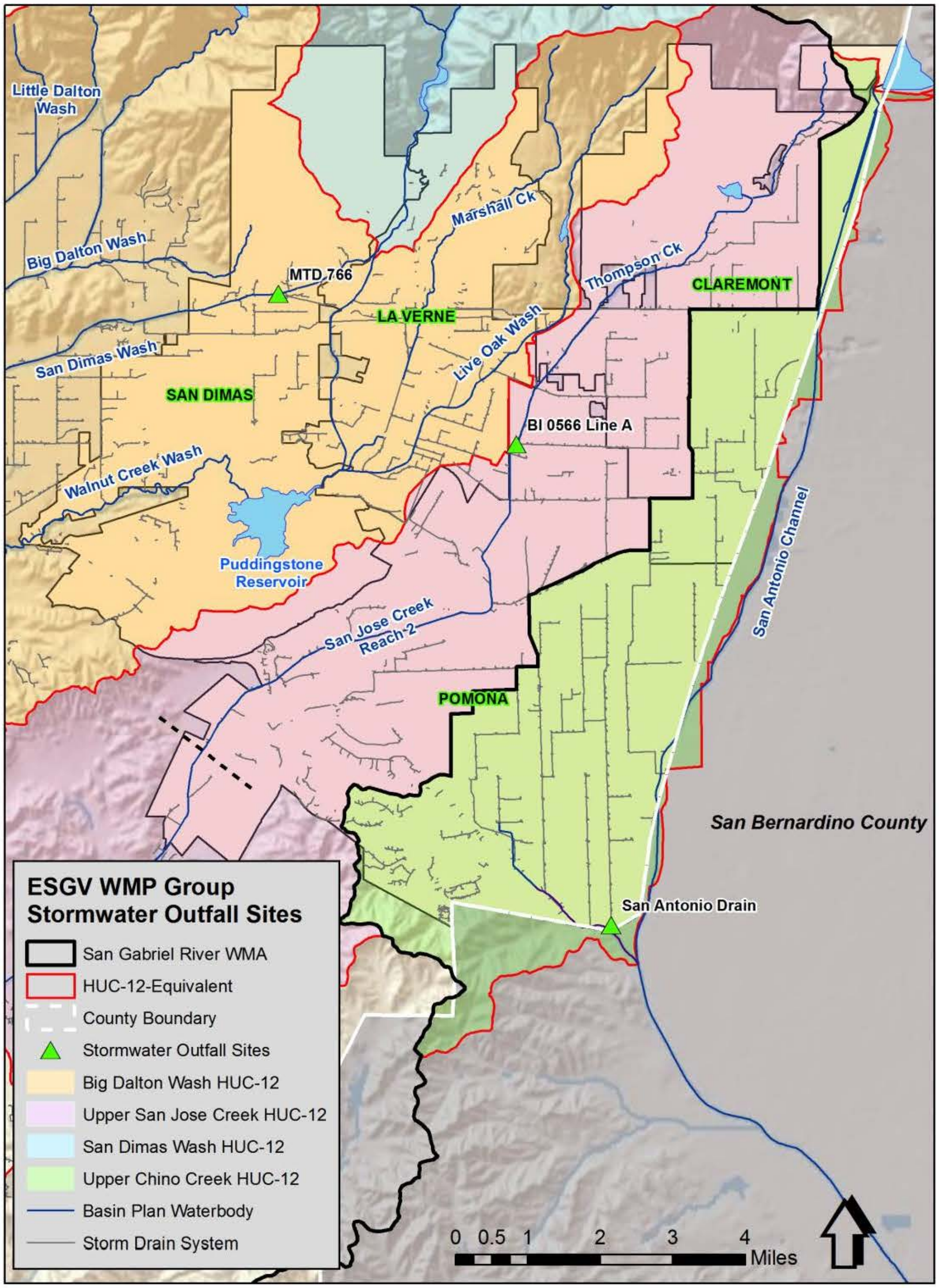
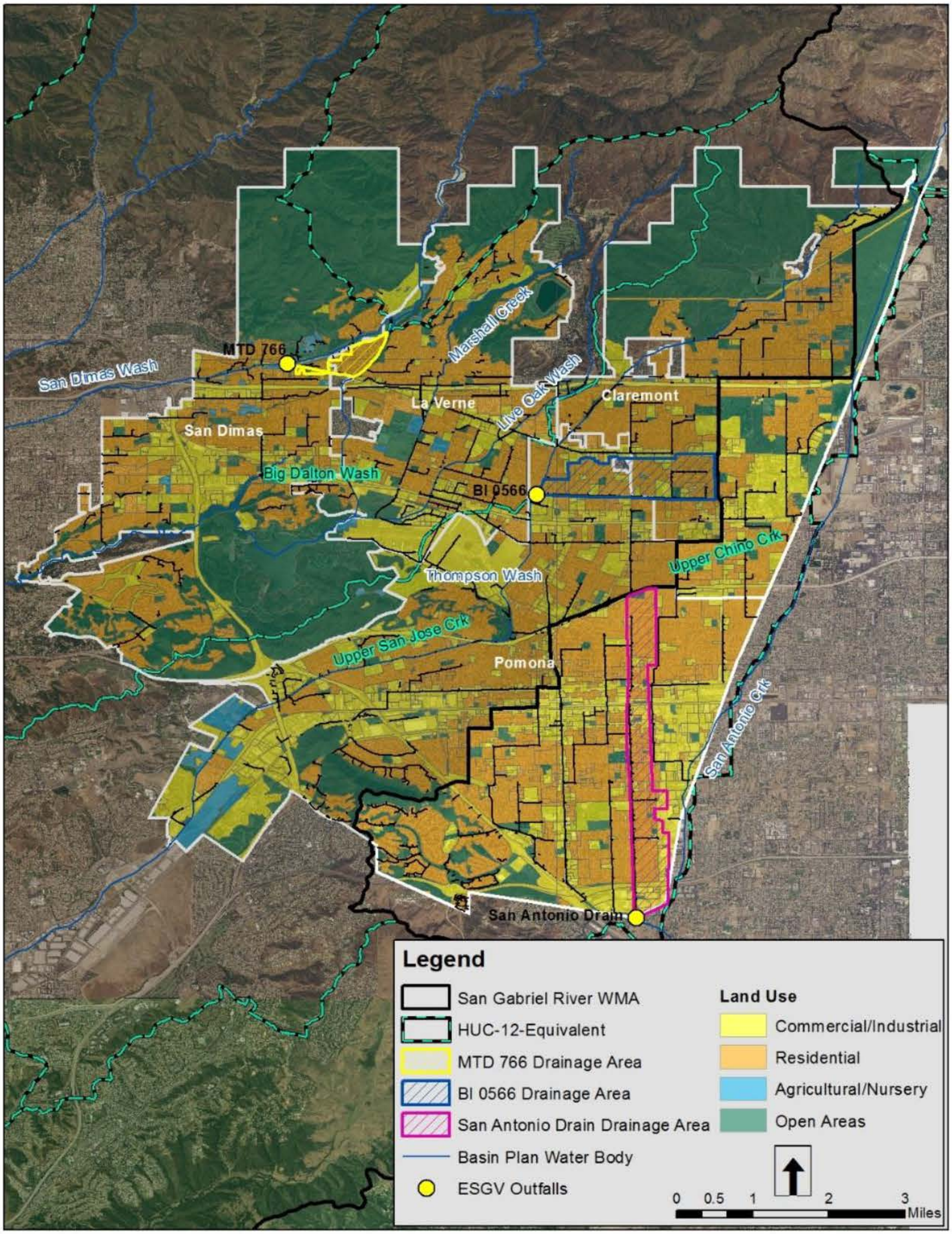


Figure 4-2.
Stormwater Outfall Monitoring Sites



The stormwater outfall monitoring sites in the ESGV WMP area are summarized in **Table 4-1**. The land uses within the outfall catchment area for the selected drains are incorporated in **Table 4-2**.

Table 4-1.
Summary of Stormwater Outfall Monitoring Sites in the ESGV WMP Area

HUC-12	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Upper San Jose Creek	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468
Upper Chino Creek	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

1 Drain eventually discharges to water body.
2 Manhole location.

Table 4-2.
Relative Land Use Area within Drain Area to Stormwater Outfall Sites

HUC-12	Area	Percent of Land Area[1]			
		Res	Com/Ind	Ag/Nur	Open
Big Dalton Wash	HUC-12[2]	60	21	1	18
	MTD 766	84	10	<1	6
Upper San Jose Creek	HUC-12[3]	54	28	4	14
	BI 0566 Line A	82	15	1	2
Upper Chino Creek	HUC-12	63	26	6	5
	San Antonio Drain Unit 1	64	30	<1	6

1 Land use classifications include: residential (res), commercial and industrial (com/ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the MS4 area considered in the WMP.
2 Big Dalton Wash HUC-12 includes Puddingstone Reservoir and County Park, downstream of the selected outfall. The catchment area is similar to the HUC-12 land use upstream of Puddingstone.
3 Includes portion of the Angeles National Forest. Land use of HUC-12 over MS4 area similar to selected drain catchment.

The stormwater outfall monitoring sites for the three major HUC-12s that cover the ESGV Group are presented in the following subsections. Photographs of each of the stormwater outfall monitoring sites are included in **Attachment B**.

While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety

issues under storm conditions. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites would need to be selected. To facilitate switching outfall locations, alternate sites for each HUC-12 are listed in **Attachment F**. The alternate sites would only become active if the original selection was deemed unrepresentative of the MS4 discharge in the HUC-12.

4.2.1 Big Dalton Wash HUC-12

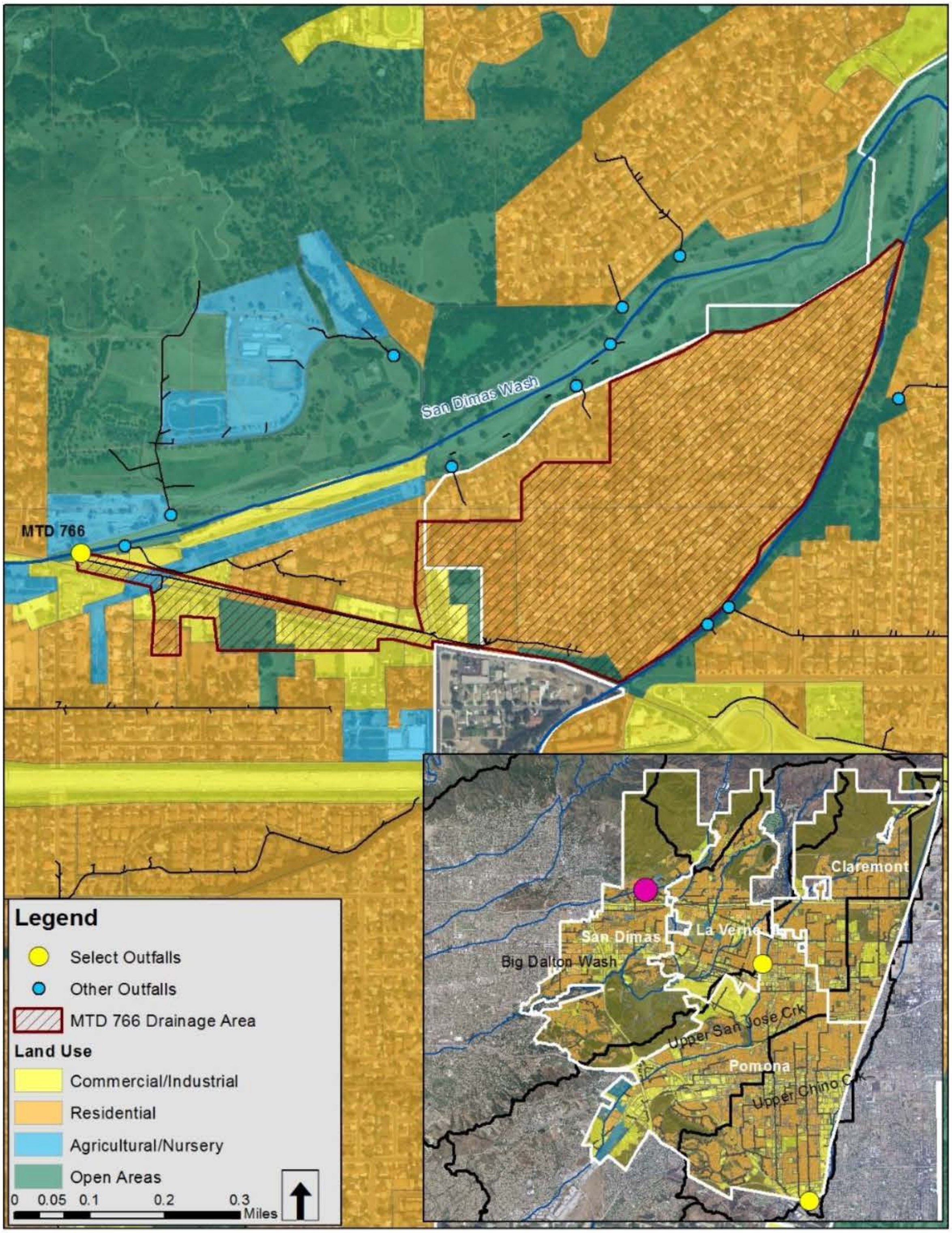
Big Dalton Wash is the largest of the three main HUC-12s for the ESGV Group. It primarily covers the cities of San Dimas and La Verne. Primary land use types include: 60% residential; 21% open space; and 18% commercial/industrial; however, the high open space percentage of the Big Dalton Wash HUC-12 is primarily due to land associated with the Puddingstone Reservoir which is under the jurisdiction of the County and LACFCD. Relevant details for the stormwater outfall monitoring site in the Big Dalton Wash HUC-12 are presented in **Table 4-3**.

Table 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215

The primary factor contributing to the selection of the MTD 766 site is its representativeness of primary land uses within its estimated drainage area with respect to the HUC-12. The outfall, estimated drainage area, and land uses are shown on **Figure 4-3**. Other factors that contributed to the selection of the MTD 766 site include space for the placement of a permanent sampling station (if desired), safe and easy access, and all public property to access sampling equipment.

Figure 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12



4.2.2 Upper San Jose Creek HUC-12

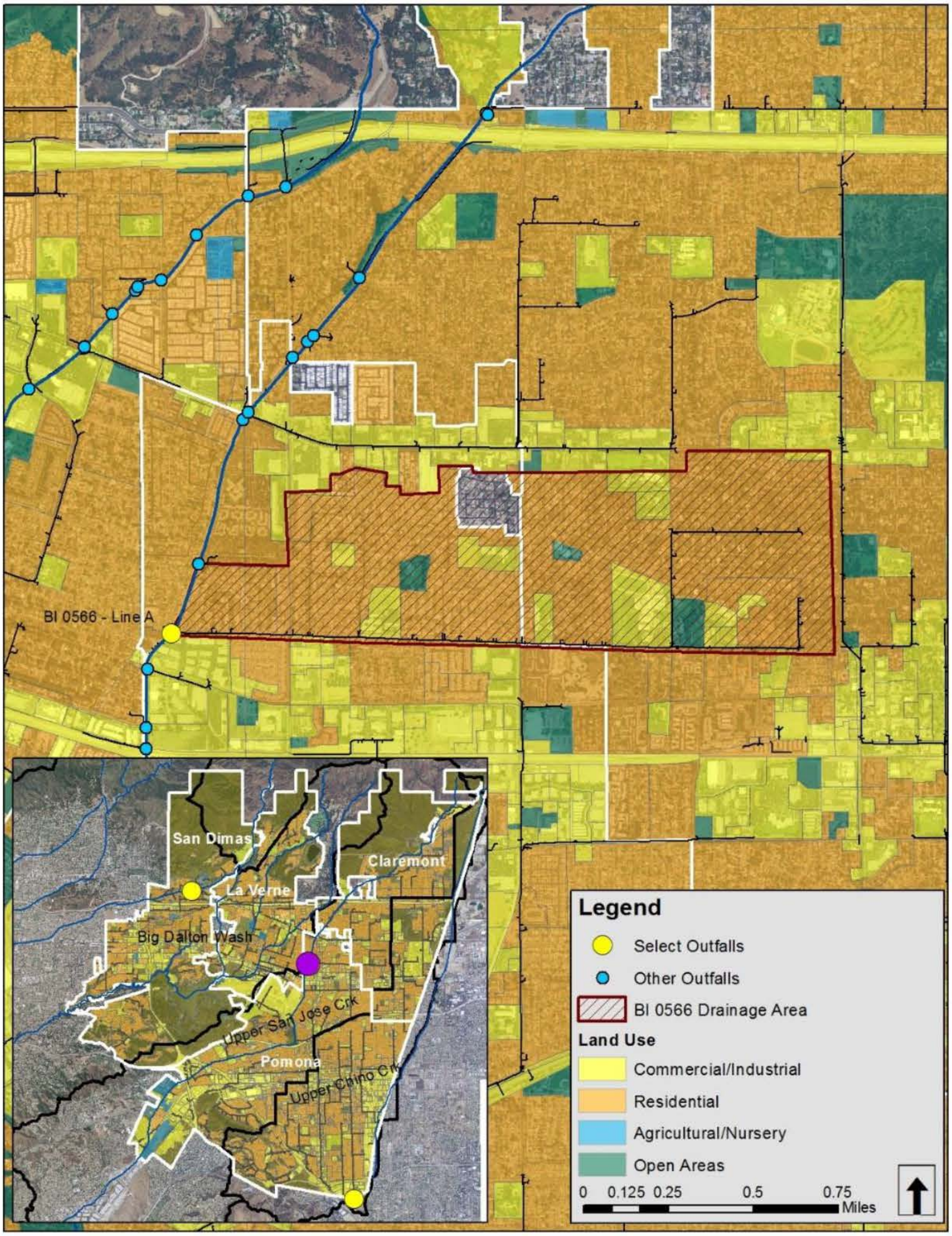
Upper San Jose Creek is the second largest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont. Primary land use types include: 54% residential; 28% commercial/industrial; and 14% open space. Relevant information for the stormwater outfall monitoring site in the Upper San Jose Creek HUC-12 are detailed in **Table 4-4**.

Table 4-4
Outfall monitoring Site – Upper San Jose Creek HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468

The primary factor contributing to the selection of the BI 0566 Line A site is the representativeness within its estimated drainage area of the surrounding HUC-12 with respect to the primary land uses. The outfall location, estimated drainage area, and land uses are displayed on **Figure 4-4**. Other factors that contributed to the selection of the BI 0566 Line A site include available space for a permanent sampling station, if determined necessary, safe and easy access, all public property, availability of a safe and accessible upstream manhole that could serve as an alternate sampling location if the outfall could not be directly sampled, and receipt of drainage from both the Cities of Claremont and Pomona. Bacteria monitoring data collected at BI 0566 Line A will also be used to evaluate compliance with the Santa Ana River Bacteria TMDL per the Bacteria TMDL monitoring outlined in **Attachment A**.

Figure 4-4.
Stormwater Outfall Monitoring Site – Upper San Jose Creek HUC-12



4.2.3 Upper Chino Creek HUC-12

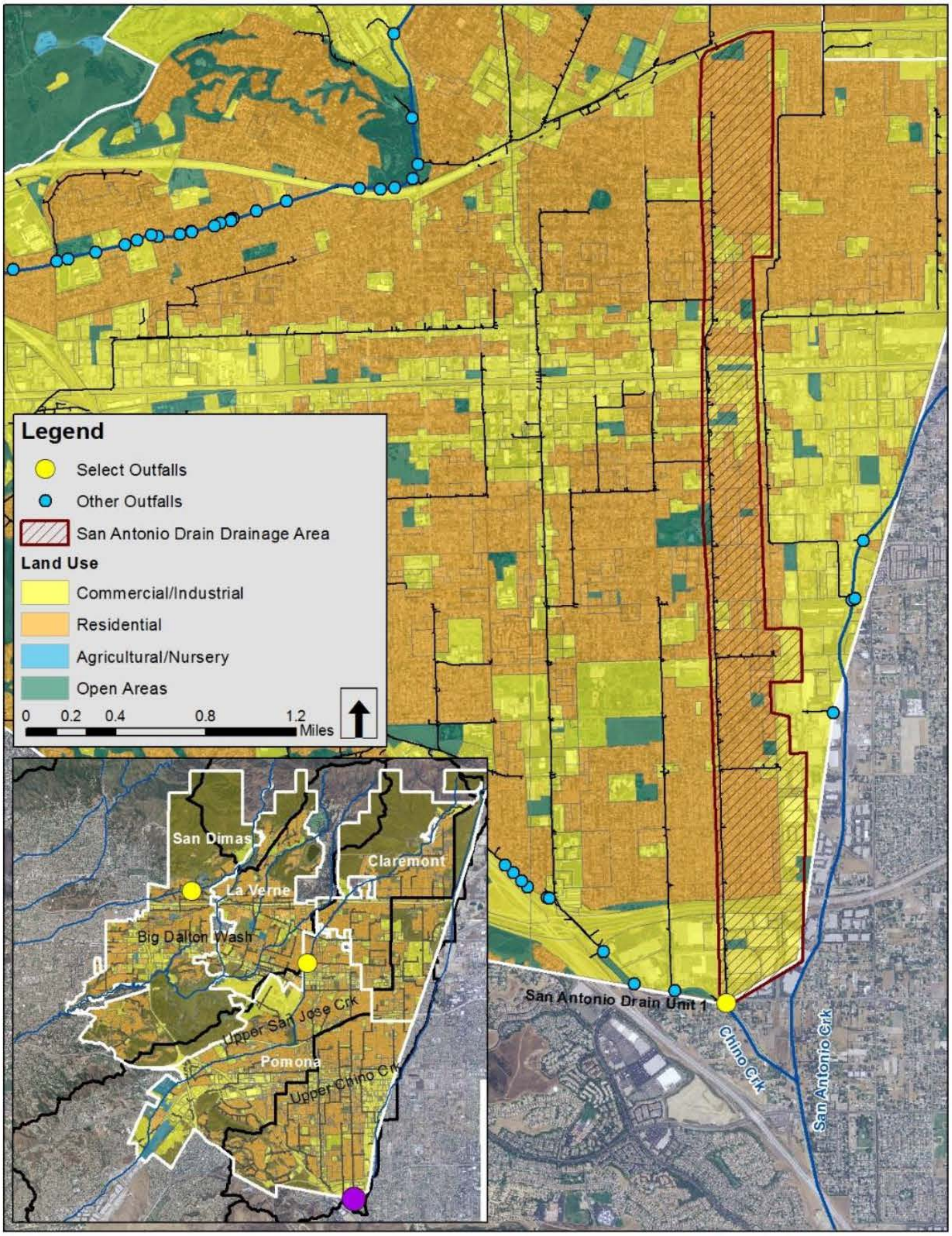
Upper Chino Creek is the smallest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont, but also covers minor portions of jurisdictions outside of the ESGV Group. Primary land use types include: 63% residential; 26% commercial/industrial; and 5% open space. **Table 4-5** details relevant information for the stormwater outfall monitoring site in the Upper Chino Creek HUC-12.

Table 4-5
Stormwater Outfall monitoring Site – Upper Chino Creek HUC-12

HUC-12	City	Name	Size	Shape	Material	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

The primary factor contributing to the selection of the San Antonio Drain Unit 1 site is its representativeness within its estimated drainage area with respect to the primary land uses of the HUC-12. The outfall, drainage area, and respective land uses are shown on **Figure 4-5**. Because the outfall is located outside of the WMP area, sampling will occur at the nearest upstream manhole. Other factors that contributed to the selection of the San Antonio Drain Unit 1 site include being located on a street with a low volume of traffic, being located on a street large enough to where traffic can easily be diverted around the sampling location without lane closure, safe and easy access for set-up and tear-down of autosampling equipment, and all public property.

Figure 4-5
Stormwater Outfall Monitoring Site – Upper Chino Creek HUC-12



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4.3 MONITORED PARAMETERS AND FREQUENCY

Outfalls discharging to flowing water bodies will be monitored for all required constituents during three storm events per year concurrently with receiving water monitoring, with the exception of toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a toxicity identification evaluation (TIE) on the observed receiving water toxicity test was inconclusive. The requirements for monitored constituents at each outfall are outlined in the MRP (Part VIII.B.1.c). Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will not be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. Parameters and frequency of stormwater monitoring are presented in **Table 4-6**.

Table 4-6.
Summary of MS4 Permit Required Stormwater Outfall Monitoring Parameters

Constituent	Annual Frequency (number of wet events per year)		
	Big Dalton Wash HUC-12 Site	Upper San Jose Creek HUC-12 Site	Upper Chino Creek HUC-12 Site
	San Dimas Wash	Thompson Creek	Chino Creek
Flow and field parameters[(1)]	3	3	3
Pollutants identified in Table E-2 of the MRP	(2)	(2)	(2)
TSS and Hardness	3	3	3
Alkalinity	3	3	
Ammonia	3	3	
TKN or Organic N	2		
Nitrate+Nitrite	2		
Orthophosphate	2		
Total Phosphorus	2		
Total Mercury	2		
Methylmercury	2		
TOC	2		
Total and Dissolved Copper	3	3	3
Total and Dissolved Lead	3	3	3
Total and Dissolved Zinc	3	3	3
Selenium		3	
E. coli	3	3	3
Cyanide		3	
PAH[(3)]		3	

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity, and TSS. The Permit lists Hardness as a field parameter, however, it is included as a laboratory measurement for consistency with receiving water.

2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will not be conducted (i.e., monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will be conducted at the frequency specified in the MRP (i.e., monitoring frequency will become 3).

3 PAHs are defined as benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

4.4 STORMWATER OUTFALL MONITORING SUMMARY

A summary of how the stormwater outfall monitoring program meets the intended objectives of the stormwater outfall monitoring program outlined in Part VIII.A of the MRP is presented in **Table 4-7**.

Table 4-7.
Summary of Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of MS4 Permit.	○ Stormwater outfall monitoring sites chosen using a representative land use approach for HUC-12s. ○ Extensive list of constituents being collectively monitored at stormwater outfall monitoring sites.
Determine whether a Permittee's discharge is in compliance with applicable WQBELs derived from TMDL WLAs.	○ Stormwater outfall monitoring sites located in water bodies with applicable WQBELs. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the water quality priorities which includes constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ Stormwater outfall monitoring sites chosen to be representative of each HUC-12. ○ Monitoring frequency equal to receiving water monitoring frequency to enable determination of whether the Permittee's discharge is causing or contributing to any observed exceedances of water quality objectives in the receiving water. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.

5 Non-Stormwater Outfall Screening and Monitoring Program

Objectives of the non-stormwater outfall monitoring include:

- Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs.
- Determine whether a discharge exceeds non-stormwater action levels.
- Determine whether a discharge contributes to or causes an exceedance of receiving water limitations.
- Assist in identifying illicit discharges.

Additionally, the outfall screening and monitoring process is intended to prioritize outfalls for assessment and, where appropriate, scheduling of BMPs to address the non-stormwater flows.

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges to receiving waters from major outfalls. The Permit defines a "major outfall" to be a MS4 outfall that discharges from a single pipe with an inside diameter of at least 36 inches, or a MS4 outfall greater than 12 inches in diameter that receives water from 2 acres of land zoned for industrial activity. The program fills two roles; the first is to provide monitoring of whether the non-stormwater constituent load is adversely impacting the receiving water and the second is to assess whether the non-stormwater discharge is allowable. The non-stormwater outfall program is designed to be complimentary to the Illicit Connection/Illicit Discharge (IC/ID) MCM.

Additionally, the outfall screening and monitoring process is intended to meet the following objectives (Part IX.A of the MRP):

1. Develop criteria or other means to ensure that all outfalls with significant non-stormwater discharges are identified and assessed during the term of the Permit.
2. For outfalls determined to have significant non-stormwater flow, determine whether flows are the result of IC/IDs, authorized or conditionally exempt non-stormwater flows, natural flows, or from unknown sources.
3. Refer information related to identified IC/IDs to the IC/ID Elimination Program (Part VI.D.10 of the Permit) for appropriate action.
4. Based on existing screening or monitoring data or other institutional knowledge, assess the impact of non-stormwater discharges (other than identified IC/IDs) on the receiving water.
5. Prioritize monitoring of outfalls considering the potential threat to the receiving water and applicable TMDL compliance schedules.

6. Conduct monitoring or assess existing monitoring data to determine the impact of non-stormwater discharges on the receiving water.
7. Conduct monitoring or other investigations to identify the source of pollutants in non-stormwater discharges.
8. Use results of the screening process to evaluate the conditionally exempt non-stormwater discharges identified in Parts III.A.2 and III.A.3 of the Permit and take appropriate actions pursuant to Part III.A.4.d of the Permit for those discharges that have been found to be a source of pollutants. Any future reclassification shall occur per the conditions in Parts III.A.2 or III.A.6 of the Permit.
9. Maximize the use of resources by integrating the screening and monitoring process into existing or planned IMP and/or CIMP efforts.

In summary, the intent of the non-stormwater outfall program is to demonstrate that the Group Members are effectively prohibiting non-exempt or conditionally non-exempt discharges to receiving waters and to assess whether non-stormwater discharges are causing or contributing to exceedances of RWLs. By detecting, identifying, and eliminating illicit discharges, the program will demonstrate efforts by the ESGV Group to effectively prohibit non-stormwater discharges to and from the MS4. Where the discharges are deemed "significant", the program will discern whether they are illicit, exempt, or conditionally exempt. Following the program procedures will allow determination of whether the discharges may be causing or contributing to exceedances of RWLs.

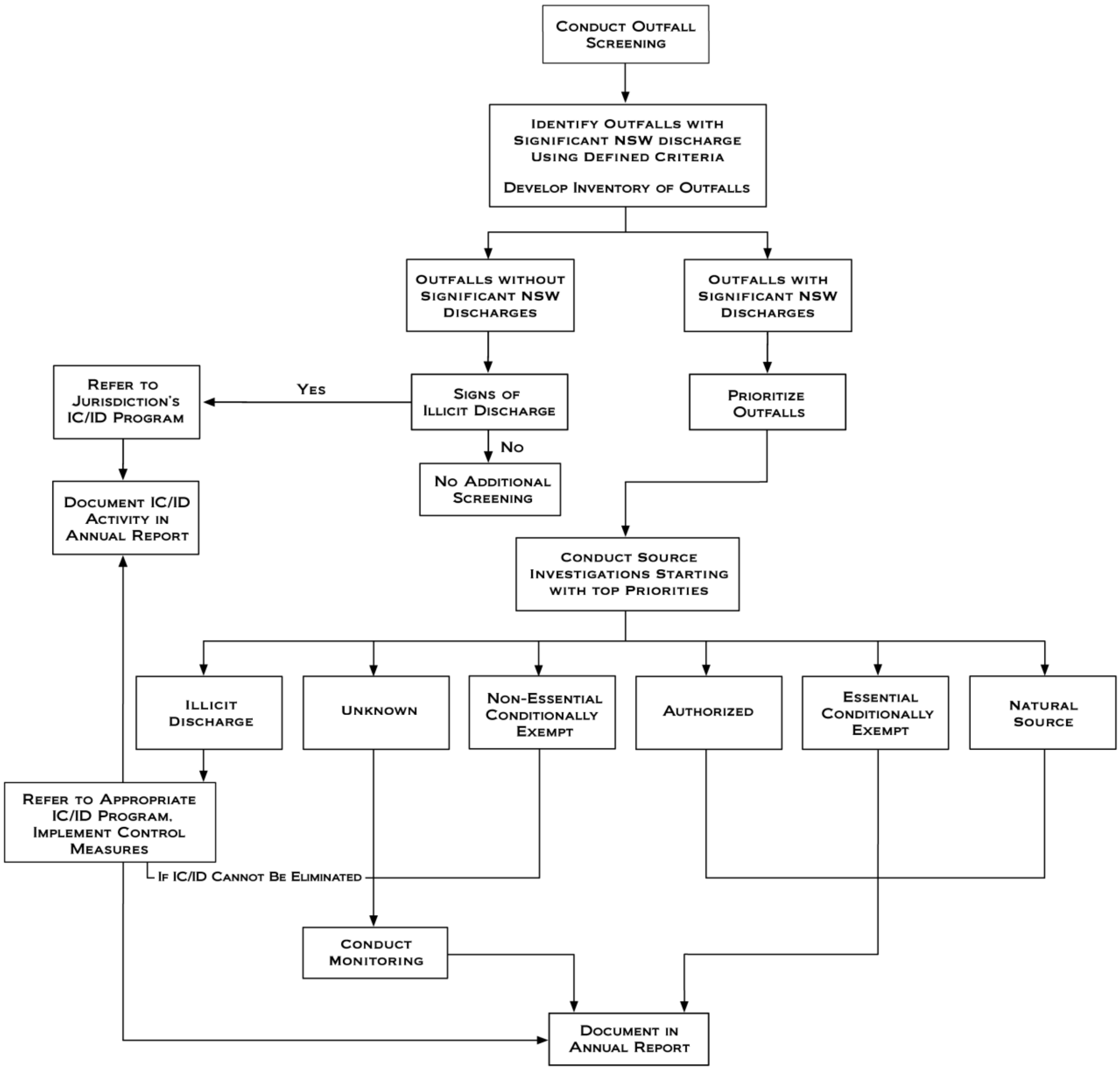
5.1 NON-STORMWATER OUTFALL SCREENING AND MONITORING PROGRAM

The Permit specifies a process for screening, investigating, and ultimately monitoring of outfalls with non-stormwater discharges. For the receiving water and stormwater monitoring programs, sufficient information is available, including guidance from the MRP, to support the identification of sites and begin the process of initiating water quality monitoring upon approval of this CIMP. For the non-stormwater outfall program, the MRP specifies a process for screening, investigating, and ultimately monitoring. The outfall screening and investigations must be completed prior to initiating monitoring at an individual outfall. A summary of the approach to address the required elements of the non-stormwater outfall program is presented in **Table 5-1**. A flowchart of the program is presented as **Figure 5-1**. Detailed discussion of each element is provided in the following subsections.

Table 5-1.
Non-Stormwater Outfall Screening and Monitoring Program Summary

Element	Description	Implementation Dates
Outfall screening	Implement a screening process to determine which outfalls exhibit significant discharges and those that do not require further investigation.	The screening process will begin summer 2014.
Identify outfalls with significant discharge	Based on data collected during the Outfall Screening process, identify MS4 outfalls with significant discharges.	
Inventory outfalls with discharge	Develop an inventory of major MS4 outfalls with known significant discharges and those requiring no further assessment.	
Prioritize source investigation	Use the data collected during the screening process to prioritize outfalls for source investigations.	
Identify sources of significant discharges	For outfalls exhibiting significant discharges, perform source investigations per the prioritization completed in the previous element.	Source investigations will be conducted for at least 25% of the outfalls with significant discharges by the end of December 28, 2015 and 100% by December 28, 2017.
Monitor discharges exceeding criteria	Using the information collected during screening and source investigation efforts, monitor outfalls that have been determined to convey significant discharges comprised of either unknown or non-essential conditionally exempt discharges, or continuing discharges attributed to illicit discharges are monitored.	First regularly scheduled dry weather monitoring event after the source investigation or after the CIMP has been approved by the Executive Officer, whichever is later.

Figure 5-1.
Non-Stormwater Outfall Screen and Monitoring Program Flow Diagram



5.2 IDENTIFICATION OF OUTFALLS WITH SIGNIFICANT NON-STORMWATER DISCHARGES

Based on a review of the information provided by the ESGV Group, the data necessary to identify significant non-stormwater discharges was not available. Thus, outfall screening will be initiated summer 2014 to collect the information to identify major outfalls exhibiting significant non-stormwater discharges and to develop the information needed for the inventory of outfalls with significant non-stormwater discharges. The MRP (Part IX.C.1) states that one or more of the following characteristics may determine significant non-stormwater discharges:

- Discharges from major outfalls subject to dry weather TMDLs.
- Discharges for which monitoring data exceeds non-stormwater action levels (NALs).
- Discharges that have caused or have the potential to cause may cause overtopping of downstream diversions.
- Discharges exceeding a proposed threshold discharge rate as determined by the Group Members.
- Persistence of flow.
- Discharges with higher flow rates.
- Larger outfall diameters.
- Discharges with odor, color, or cloudiness.
- Discharges into receiving waters with flows at the point of discharge.

To collect data for determining the significant non-stormwater outfalls, the ESGV Group will perform three dry-weather screenings. The initial screening provides the dual purpose of data collection for completing the outfall database and initial evaluation of outfalls. Each outfall in the EMWP area will be visited during the first screening. A standard form will be used to collect characteristic data, consisting of:

- Receiving water channel bottom.
- Presence of water in channel.
- Visual estimate of discharge flow rate.
- Whether discharge ponds in the channel or reaches a flowing receiving water.
- Clarity.
- Presence of odors or foam.

Data collected through the screening process are the characteristics that will be utilized to determine which outfalls should be targeted for the next steps in the non-stormwater outfall program. The characteristics utilized will support a focus on discharges that have, or the potential to have, an impact on receiving waters. The receiving waters within the ESGV WMP area discharge to various downstream water bodies. The components of the outfall screening process are presented in **Table 5-2**. The determination of significance will be made after the three screenings have been completed and the characteristics have been reviewed.

Table 5-2.
Approach for Establishing a Non-Stormwater Outfall Screening Process

Component	Description
Data Collection	Data include qualitative flow size, channel bottom, ponding of discharge, clarity, color, and odor. Any additional information needed to complete the inventory will be collected. Land use and permitted dischargers will be considered in the evaluation with field data to determine significant non-stormwater discharge.
Frequency	Three field screening events per outfall will be conducted. Visual information will be collected on all flowing drains greater than 12 inches in diameter.
Defining Significant Discharges	Will be determined after screening events are completed. Visual information from the screening, such as flow size persistent flow, flow condition in receiving water, may be considered to determine significant discharges. Land use information or SIC codes may also be considered to include only drains 12 to 36 inches in diameter from areas with industrial drainage.
Timeline	The non-stormwater outfall screening process will begin in the summer of 2014.

5.3 INVENTORY OF MS4 OUTFALLS WITH NON-STORMWATER DISCHARGES

An inventory of MS4 outfalls must be developed to identify those outfalls with dry weather discharge. The inventory is split into two major categories, those with known significant non-stormwater discharges, and those requiring no further assessment (Part IX.D of the MRP). If the MS4 outfall requires no further assessment, the inventory must include the rationale for the determination of no further action required. Rationale for a determination of no future action would be expected to include 1) the outfall does not have persistent flow; 2) the outfall does not have a significant non-stormwater discharge; or 3) discharges observed were determined to be exempt. The inventory would be included in a database generated by the ESGV Group as required by the MRP. Each year, the inventory must be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharges.

The following physical attributes of outfalls with significant non-stormwater discharges must be included in the inventory and is being collected as part of the screening process:

- Date and time of last visual observation or inspection.
- Outfall alpha-numeric identifier.
- Description of outfall structure including size (e.g., diameter and shape.)
- Description of receiving water at the point of discharge (e.g., natural, soft-bottom with armored sides, trapezoidal, concrete channel.)
- Latitude/longitude coordinates.
- Nearest street address.

- Parking, access, and safety considerations.
- Photographs of outfall condition.
- Photographs of significant non-stormwater discharge or indicators of discharge unless safety considerations preclude obtaining photographs.
- Estimation of discharge rate.
- All diversions either upstream or downstream of the outfall.
- Observations regarding discharge characteristics such as turbidity, odor, color, presence of debris, floatables, or characteristics that could aid in pollutant source identification.
- Flow condition in the receiving water at the point of discharge (dry, ponding, flowing, or tidal influence.)

5.4 PRIORITIZED SOURCE IDENTIFICATION

Once the major outfalls exhibiting significant non-stormwater discharges have been identified through the screening process and incorporated in the inventory, Part IX.E of the MRP requires that the ESGV Group prioritize the outfalls for further source investigations. The MRP identifies the following prioritization criteria for outfalls with significant non-stormwater discharges:

- Outfalls discharging directly to receiving waters with WQBELs or RWLs in the TMDL provisions for which final compliance deadlines have passed.
- All major outfalls and other outfalls that discharge to a receiving water subject to a TMDL shall be prioritized according to TMDL compliance schedules.
- Outfalls for which monitoring data exist and indicate recurring exceedances of one or more of the non-stormwater action levels (NALs) identified in Attachment G of the Permit.
- All other major outfalls identified to have significant non-stormwater discharges.

Data collected during the three screenings may be used to refine the determination of significance. Once the prioritization is complete, a source identification schedule will be developed. The scheduling will focus on the outfalls with the highest pollutant of concern loading rates first. Unless the results of the field screening justify a modification to the schedule in the MRP, the schedule will ensure that source investigations are completed on no less than 25% of the outfalls with significant non-stormwater discharges by December 28, 2015 and 100% by December 28, 2017.

5.5 SIGNIFICANT NON-STORMWATER DISCHARGE SOURCE IDENTIFICATION

The screening and source identification component of the program is used to identify the source(s) and point(s) of origin of the non-stormwater discharge. Based on the prioritized list of major outfalls with significant non-stormwater discharges, investigations will be conducted to identify the source(s) or potential source(s) of non-stormwater flows.

Source investigations will be conducted using site-specific procedures based on the characteristics of the non-stormwater discharge. Investigations could include:

- Gathering field measurements to characterize the discharge.
- Following dry weather flows from the location where they are first observed in an upstream direction along the conveyance system.
- Compiling and reviewing available resources including past monitoring and investigation data, land use/MS4 maps, aerial photography, and property ownership information.

Part IX.A.2 of the MRP requires the source investigation results be classified into one of four endpoints outlined as follows and summarized in **Table 5-3**:

A. IC/IDs: If the source is determined to be an illicit discharge, the procedures to eliminate the discharge consistent with IC/ID requirements must be implemented and document actions.
B. Authorized or conditionally exempt non-stormwater discharges: If the source is determined to be an NPDES permitted discharge, a discharge subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or a conditionally exempt essential discharge, the Group Members must document the source. For non-essential conditionally exempt discharges, the Group Members must conduct monitoring consistent with Part IX.G of the MRP to determine whether the discharge should remain conditionally exempt or be prohibited.
C. Natural flows: If the source is determined to be natural flows, the Group Members must document the source.
D. Unknown sources: The Group Members must conduct monitoring consistent with the MRP if a source is unknown.

Table 5-3.
Summary of Endpoints for Source Identification

Endpoint	Follow-up	Action Required by Permit
A. Illicit Discharge or Connection	Refer to IC/ID program	Implement control measures and report in annual report. Monitor if cannot be eliminated.
B. Authorized or Conditionally Exempt Discharges(1)	Document and identify if essential or non-essential	Monitor non-essential discharges
C. Natural Flows	End investigation	Document and report in annual report
D. Unknown	Refer to IC/ID program	Monitor

1 Discharges authorized by a separate NPDES permit, a discharge subject to a Record of Decision approved by USEPA pursuant to section 121 of CERCLA, or is a conditionally exempt non-stormwater discharge addressed by other requirements. Conditionally exempt non-stormwater discharge addressed by other requirements are described in detail in Part III.A. Prohibitions – Non-Stormwater Discharges of the Permit.

Where investigations determine the non-stormwater source to be authorized, natural, or essential conditionally exempt flows, the ESGV Group will conclude the investigation and move to the next highest priority outfall for investigation. Where investigations determine that the source of the discharge is non-essential conditionally exempt, an illicit discharge, or is unknown – further investigation may be conducted to eliminate the discharge or demonstrate that it is not causing or contributing to receiving water problems. In some cases, source investigations may ultimately lead to prioritized programmatic or structural BMPs. Where Group Members determine that they will address the non-stormwater discharge through modifications to programs or by structural BMP implementation, the ESGV Group will incorporate the approach into the implementation schedule developed for the WMP and the outfall can be lowered in priority for investigation, such that the next highest priority outfall may be addressed.

5.6 NON-STORMWATER DISCHARGE MONITORING

As outlined in the MRP, outfalls with significant non-stormwater discharges that remain unaddressed after source investigation shall be monitored to meet the following objectives:

A. Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs;
B. Determine the quality of a discharge exceeds non-stormwater action levels, as described in Attachment G of the Permit; and
C. Determine whether a discharge causes or contributes to an exceedance of receiving water limitations.

As identified in **Table 5-3**, outfalls that have been determined to convey significant non-stormwater discharges where the source investigations concluded that the source is attributable to a continued illicit discharge (Endpoint A), non-essential conditionally exempt (Endpoint B), or unknown (Endpoint D) must be monitored. Monitoring will begin at the first regularly scheduled dry weather event after completing a source investigation.

5.6.1 Non-Stormwater Outfall-Based Monitoring Sites

The outfall screening and prioritization approach will result in an inventory of outfalls. Where required, the non-stormwater discharge will be monitored per the Permit requirements. The monitoring is described in the following section.

5.6.2 Monitored Parameters and Frequency of Monitoring

The requirements for constituents to be monitored are outlined in the Part VIII.G.1.a-e of the MRP. Outfalls will be monitored for all required constituents except toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a Toxicity Identification Evaluation (TIE) on the observed receiving water toxicity test was inconclusive. Additionally, parameters in **Attachment C** will not be able to be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. A list of parameters applicable to non-stormwater outfall monitoring, based on which receiving water the discharge is to, is presented in **Table 5-4**. Also, constituents associated with suspended sediments transported during wet weather (i.e., PCBs, DDTs, dieldrin, and chlordane) will not be monitored during non-stormwater outfall monitoring.

Table 5-4.
Summary of Non-Stormwater Outfall Monitoring Parameters

Constituent	Subwatershed Annual Frequency (Dry events per year)							
	San Dimas Wash	Walnut Creek Wash	Puddingstone Channel	Marshall Creek	Live Oak Wash	San Jose Creek	Chino Creek	San Antonio Creek
Flow and field parameters[1]	2	2	2	2	2	2	2	2
Pollutants identified in Table E-2 of the MRP	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Hardness and TSS	2	2	2	2	2	2	2	2
Alkalinity		2	2	2	2	2		
Ammonia		2	2	2	2	2		
Total Mercury		2	2	2	2			
Total and Dissolved Copper	2	2	2	2	2	2	2	2
Total and Dissolved Lead	2	2	2	2	2	2	2	2
Total and Dissolved Zinc	2	2	2	2	2	2	2	2
Selenium						2		
E. coli	2	2	2	2	2	2	2	2
Cyanide						2		
PAHs[3]						2		
TDS	2	2	2	2	2	2		
Sulfate	2	2	2	2	2	2		
Chloride	2	2	2	2	2	2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity. Hardness is specified as a field measurement in the Permit, however to be consistent with the receiving water, it will be measured in the laboratory.

2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, non-stormwater outfall monitoring will not be conducted (i.e., the monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, Non-stormwater outfall monitoring will become 2.

3 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

The MRP specifies the monitoring frequency for non-stormwater outfall monitoring as the following:

- For outfalls subject to a dry weather TMDL, the monitoring frequency shall be per the approved TMDL monitoring plan or as otherwise specified in the TMDL or as specified in an approved CIMP.
- For outfalls not subject to dry weather TMDLs, approximately quarterly for first year.
- Monitoring can be eliminated or reduced to twice per year, beginning in the second year of monitoring if pollutant concentrations measured during the first year do not exceed WQBELs, NALs or water quality standards for pollutants identified on the 303(d) List.

The non-stormwater outfall monitoring events will be coordinated with the dry weather receiving water monitoring events to allow for an evaluation of whether the non-stormwater discharges are causing or contributing to an observed exceedance of water quality objectives in the receiving water. While a monitoring frequency of four times per year is specified in the Permit, it is inconsistent with the dry weather receiving water monitoring requirements. The receiving water monitoring requires two dry weather monitoring events per year. Therefore, non-stormwater outfall monitoring events will be conducted twice per year.

A summary of how the non-stormwater outfall monitoring program meets the intended objectives of the non-stormwater outfall monitoring program outlined in Part II.E.3 of the MRP is presented in **Table 5-5**.

5.6.3 Adaptive Monitoring

Monitoring for non-stormwater discharges will be more dynamic than either the receiving water or stormwater outfall monitoring. As non-stormwater discharges are addressed, monitoring at the outfall will cease. Additionally, if monitoring demonstrates that discharges do not exceed any WQBELs, non-NALs, or water quality standards for pollutants identified on the 303(d) list, monitoring will cease at an outfall after the first year. The process of updating the CIMP per the monitoring results is presented in **Section 10**. Thus, the number and location of outfalls monitored has the potential to change on an annual basis.

Table 5-5.
Summary of Non-Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether a Permittee's discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs	○ List of constituents based on the water quality priorities which incorporate constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge exceeds non-stormwater action levels, as described in Attachment G of the MS4 Permit.	○ Extensive list of constituents being collectively monitored at non-stormwater outfall monitoring sites.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.
Assist a Permittee in identifying illicit discharges as described in Part VI.D.10 of the MS4 Permit.	○ Non-stormwater outfall program is designed to be complimentary to IC/ID program. ○ Non-stormwater outfall program provides a mechanism for the detection, identification, and elimination of illicit discharges. ○ Where non-stormwater discharges are deemed "significant", the non-stormwater outfall program will discern whether the discharges are illicit, exempt, or conditionally exempt. ○ If the source identification component of the non-stormwater outfall program determines a discharge to be an illicit discharge, the discharge will be referred to the IC/ID program.

6 New Development/Re-Development Effectiveness Tracking

6.1 PROGRAM OBJECTIVES

Group Members have developed mechanisms for tracking information related to new and redevelopment projects that are subject to post-construction BMP requirements in Part VI.D.7 of the Permit. The specific data to be tracked listed in Part X.A of the MRP are listed in **Table 6-1**. The data will be used to assess the effectiveness of the low-impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction.

Table 6-1.
Required Data to Track for New and Redevelopment Projects per Attachment E.X.A

New Development and Redevelopment Data per Attachment E.X.A	
✓ Name of the Project	✓ Project design storm volume (gallons or million gallons per day (MGD))
✓ Name of the Developer	✓ Percent of design storm volume to be retained onsite
✓ Project location and map[(1)]	✓ Design volume for water quality mitigation treatment BMPs (if any)
✓ Documentation of issuance of requirements to the developer	✓ One year, one hour storm intensity[(2)] (if flow through treatment BMPs are approved)
✓ 85^{th} percentile storm event for the project design (inches per 24 hours)	✓ Percent of design storm volume to be infiltrated at an offsite mitigation or groundwater replenishment site
✓ 95^{th} percentile storm event for projects draining to natural water bodies (inches per 24 hours)	✓ Percent of design storm volume to be retained or treated with biofiltration at an offsite retrofit project
✓ Other design criteria required to meet hydromodification requirements for drainages to natural water bodies	✓ Location and maps of offsite mitigation, groundwater replenishment, or retrofit sites[1]
✓ Project design storm (inches per 24 hours)	✓ Date of Certificate of Occupancy

1 Preferably linked to the GIS Storm Drain Map
2 As depicted on the most recently issued isohyetal map published by the Los Angeles County hydrologist

6.2 EXISTING NEW DEVELOPMENT/RE-DEVELOPMENT TRACKING PROCEDURES

The Standard Urban Stormwater Mitigation Program (SUSMP) requirements implemented under the previous MS4 Permit (Order R4-01-182) laid the foundation for the MCMs contained in Part VI.D.7 of the current Permit. With implementation of the SUSMP, Permittees required post construction BMPs on applicable projects, developed standard requirements for project submittals, and began to track related data. The Group Members will build on the existing procedures for land development to ensure that all required project data is captured.

Internal procedures and data protocols that clearly define departmental roles and responsibilities pertaining to data collection, data management, and tracking will be utilized. These procedures will include points in the process where data are generated and tracked, who is responsible for tracking the data, and how the data will be managed. Data management protocols and internal procedures, will also consider the land development data tracking requirements contained in Part VI.D.7.d.iv.(1)(a). These requirements are distinct from those listed in the MRP but will be addressed similarly. Data requirements under Part VI.D are contained in **Table 6-2**.

Table 6-2.
Required Data to Track for New and Redevelopment Projects per Part VI.D.7.d.iv.(1)(a)

✓ Municipal Project ID	✓ Maintenance Records
✓ State Waste Discharge Identification Number	✓ Inspection Date(s)
✓ Project Acreage	✓ Inspection Summary(ies)
✓ BMP Type and Description	✓ Corrective Action(s)
✓ BMP Location (coordinates)	✓ Date Certificate of Occupancy Issued
✓ Date of Acceptance	✓ Replacement or Repair Date
✓ Date of Maintenance Agreement	

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7 Regional Studies

One regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The SMC is a collaborative effort between all of the Phase I MS4 NPDES Permittees and NPDES regulatory agencies in Southern California. The Southern California Coastal Water Research Project (SCCWRP) oversees the SMC.

On behalf of Group Members, the LACFCD will continue to provide full financial and/or monitoring resources to the SMC regional watershed monitoring program, also known as the Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program (Bioassessment Program). The Bioassessment Program was initiated in 2009 and is structured to occur in cycles of five years. Sampling under the first cycle concluded in 2013. The next five-year cycle is scheduled to begin in 2015, with additional special study monitoring scheduled to occur in 2014.

8 Non-Direct Measurements

Water quality data collected through other monitoring programs (e.g., WRPs receiving water monitoring) in the watershed will be evaluated to the extent practicable. The extent practicable will be dictated by the cost of gathering and compiling information from outside programs. It is not the intent or purpose of the CIMP to compile and analyze all available data. Data reported by these entities will be evaluated for suitability for inclusion in the CIMP database. If the data are deemed to be suitable they will be included in the ESGV CIMP database. Data from other programs will be used to supplement land use data to evaluate loading to the receiving water as well as to evaluate receiving water quality. Environmental data reported by other entities will be evaluated for suitability for inclusion in this CIMP database and will be accepted if it meets the following requirements:

- Conducted and documented consistent with the sampling procedures outlined in this CIMP.
- Sampling collection is performed and documented by a competent party consistent with applicable guidance and this CIMP.
- Sample analysis is conducted using approved analytical method by a certified analytical laboratory.

Receiving water monitoring sites were selected to allow coordination between this CIMP and LACSD receiving water monitoring programs. Currently, the San Gabriel River estuary site, R-8, will be used for dry weather Harbors Toxics TMDL monitoring requirements. If additional sites are moved to be coincident with the Water Reclamation Plant program, environmental data collected by the Water Reclamation Plants may be directly used in place of the monitoring described in this CIMP.

Due to the absence of previously collected monitoring results, an understanding has not been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 may be causing or contributing to the impairments identified in the Harbor Toxics TMDL. As such, to gain a clear understanding, environmental data representative of the entire San Gabriel River WMA will be collected downstream of the ESGV WMP area and directly used for suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. The downstream Lower San Gabriel River (LSGR) EWMP Group conducting monitoring in San Gabriel Reach 1 will conduct wet weather suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. After a better understanding has been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 are causing or contributing to the impairments identified in the Harbor Toxics TMDL, the Group Members may elect to also conduct suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL at the receiving water LTA sites.

Non-direct measurements of flow and rainfall information will be obtained from the LACFCD as described in **Attachment D**.

9 Monitoring Procedures

A general outline of the monitoring procedures is presented in this section. Detailed discussion of the procedures is included in **Attachment D**.

9.1 MONITORING PROCEDURES

Monitoring will occur during dry and wet conditions. Wet weather conditions for triggering storm events will be defined as a 70 percent probable forecast of greater than 0.25 inches of precipitation of rain where the preceding 72 hours of dry weather has less than 0.1 inches of rain. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow. In the case of an estuary, dry weather is defined as days with less than 0.1 inches of rain and days more than three days after a rain event of 0.1 inches or greater within the watershed, as measured from at least 50 percent of LACDPW controlled rain gauges within the watershed.

Note that if rainfall begins after dry weather monitoring has been initiated then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events as the composition of the receiving water will change less over time; and thus, the grab samples sufficiently characterize the receiving water. Additionally, grab samples for dry weather are consistent with similar programs throughout the region.

Composite samples will be used for wet weather sampling events to sufficiently characterize the receiving water during wet weather. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli; oil and grease), conditions are considered unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (auto-sampler) may not be warranted. Additionally, if auto-samplers fail during a rain event, or if the rain event is such that composite samples cannot be collected (e.g., very short in duration or volume), grab samples will be collected and submitted for analysis for all analytes. For dry weather toxicity monitoring, the sampling event must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry weather monitoring event will take place during January unless sampling during another month is deemed to be necessary or preferable.

All reasonable efforts will be made to monitor the first significant rain event of the storm year (first flush). The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Jose Creek and San Dimas Wash over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect some or all samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

Additional information to support evaluating weather conditions, collecting grab and composite samples, and targeting wet weather sampling events is provided in **Attachment D**.

9.2 ADAPTIVE MONITORING TRIGGER

Monitoring of a specific constituent will be eliminated if:

- For a water body pollutant combination (WBPC) covered in a TMDL, no exceedances are observed over a five-year period.
- For a WBPC on the 303(d) list, data collected are sufficient to support delisting per State policy.
- WBPC being monitored due to downstream 303(d) listings, two years of monitoring of no exceedances are observed for the same condition as the listing (i.e., wet or dry weather).
- Category 3C WBPCs having no exceedances over two years.

Category 3A WBPCs will be moved to Category 3C if there are two years of no observed exceedances. Additionally, monitoring for a constituent at the TMDL receiving water sites may be triggered in the future if two consecutive exceedances during the same condition (i.e., wet or dry weather) are observed at the LTA site. If a TMDL receiving water site has observed two consecutive exceedances during the same condition, the constituent will be added to the nearest upstream stormwater outfall or significant non-stormwater outfall site for wet or dry weather, respectively. Monitoring would be initiated at upstream receiving water monitoring sites during subsequent events until the elimination of the WBPC described above are triggered.

The monitoring data will be reviewed annually to determine if constituent lists for monitoring sites require updating. When additions or removals are triggered, the changes will become effective for the subsequent monitoring season and reported in the annual report.

9.3 AQUATIC TOXICITY TESTING

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. The following outlines the approach for conducting aquatic toxicity monitoring and evaluating results. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP. As *C. dubia* is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, *C. dubia* is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool.

Per the MRP, acute and chronic toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010).

For acute and chronic *C. dubia* toxicity testing, if a statistically significant 50% difference in mortality is observed between the sample and laboratory control, a TIE will be performed. If a statistically significant 50% difference in a sub-lethal endpoint is observed between the sample and laboratory control, a confirmatory sample will be collected from the receiving water within two weeks of obtaining the results of the initial sample. If a statistically significant 50% difference in mortality or sub-lethal endpoint is observed between the sample and laboratory control on the confirmatory sample, a TIE will be performed.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE positive control "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity.

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s). The Group Members will prepare a discharge assessment plan if TIEs conducted on consecutive sampling events are inconclusive. Discharge assessments will be conducted after consecutive inconclusive TIEs, rather than after one, because of the inherit variability associated with the toxicity and TIE testing methods.

Monitoring for constituents identified based on the results of a TIE will occur as soon as feasible following the completion of a successful TIE (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a successful TIE).

The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

9.4 SUSPENDED SEDIMENT SAMPLING

Most of the organochlorine (OC) pesticides and PCBs tend to strongly associate with sediment and organic material. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors. Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in the County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events.

Where analyses for storm borne sediment are required, the HRMS method will be used to quantify the constituents. Details of the method are presented in **Attachment D**.

10 Adaptive Management

The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. As noted in this CIMP, several monitoring elements are dynamic that will require modifications to the monitoring sites, schedule, frequency or parameters. In particular, the non-stormwater screening program and the toxicity monitoring will likely generate changes that need to be incorporated. This section lays out a range of possible modifications to this CIMP and the process for CIMP revision and update.

10.1 INTEGRATED MONITORING AND ASSESSMENT PROGRAM

Monitoring is based on water quality issues identified in downstream water bodies. As data are collected and currently identified constituents prove to not be an issue in the ESGV WMP area water bodies, they will be removed from the monitoring program. Likewise, if new constituents are identified, they will be added to the ongoing monitoring program. Every year, an evaluation will be conducted to identify potential modifications resulting from the following:

- TIEs result in the identification of additional constituents that need to be monitored.
- Additional upstream receiving water monitoring is necessary to characterize the spatial extent of RWL exceedances.
- Additional outfall monitoring is needed in response to RWL exceedances.
- Non-stormwater outfall sites will change as discharges are addressed.
- Monitoring data demonstrates that water quality objectives are not being exceeded in the receiving waters.
- Source investigations determine that MS4 discharges are not a source of a constituent.

The results from the monitoring are meant to tie into the WMP as feedback for the water quality changes resulting from control measures implemented by the Group Members. As a result, additional changes may be considered during the evaluation based on the control measure implementation needs.

10.2 CIMP REVISION PROCESS

A range of sampling specified in the CIMP may result in data that will require changes to ensure monitoring meets the requirements and intent of the MRP and supports WMP implementation. However, since many of those potential changes are identified in this CIMP, it should not be necessary to obtain Regional Board approval of modifications already considered in this CIMP to ensure timely implementation of appropriate modifications to monitoring. Changes identified in this section will be discussed in the annual report and implemented starting no later than the first CIMP monitoring event of the next monitoring year (i.e., October 1 of the year following the annual report submittal), consisting of:

1. Adding constituents at receiving water and/or outfall monitoring sites, increasing monitoring frequency, or adding sites as a result of requirements in the MRP (e.g., TIE results), procedures outlined in this CIMP or to further support meeting the monitoring objectives.
2. Discontinuing monitoring for Table E-2 constituents that are not identified as a water quality priority, i.e. not previously monitored, and are not detected at levels above relevant water quality objectives in the first year of monitoring.
3. Discontinuing monitoring of any Category 3 constituent at a specified site if there are two consecutive years of monitoring for the same condition (i.e., wet or dry weather) with no exceedances observed.
4. Modifying methods for consistency with USEPA method requirements or to achieve lower detection limits.
5. Changing analytical laboratories.
6. Relocating an outfall monitoring location determined to be not representative of MS4 discharges in the WMP area, for reasons other than the observed water quality, or because monitoring at the site is not feasible.
7. Implementing the changes associated with conducting at least one re-assessment of the Non-stormwater Outfall Program during the Permit term.
8. Modifications to sampling protocols resulting from coordination with other watershed monitoring programs. In particular, suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL will be conducted downstream of the WMP area. If consistent exceedances of interim WQBELs are observed and the MWP group determines that control measures will need to be implemented to meet the final WQBELs by March 23, 2032, the group will commence monitoring at the LTA site to assess the degree to which discharges from the WMP area are causing or contributing to those exceedances. After March 23, 2032, if there are two consecutive monitoring events with exceedances observed, the WMP Group will commence monitoring at the stormwater outfall monitoring sites to assess the degree to which discharges from each of the Group Members may be causing or contributing to those exceedances.

Should additional modifications be identified that are not specified in this section that would be major changes to the approach (e.g., moving or removing a stormwater outfall or receiving water location), the modifications will be proposed in the annual report and in a separate letter to the Regional Board Executive Officer for approval.

11 Reporting and Data Management

The following sections provide an overview of the monitoring and reporting the Group Members will follow. Details of the data management and reporting are included in **Attachment D**.

11.1 DOCUMENTS AND RECORDS

The ESGV Group shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the Permit, and records of all data used to completed the Report of Waste Discharge and application of the Permit, for a period of at least three years from the date of the sample, measurement, report, or application.

11.1.1 Event Summary Reports

Reports of monitoring activities will include, at a minimum, the following information:

- The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
- The individual(s) who performed the sampling or measurements.
- The date(s) analyses were performed.
- The individual(s) who performed the analyses.
- The analytical techniques or methods used.
- The results of such analyses.
- The data sheets showing toxicity test results.

11.1.2 Semi-Annual Analytical Data Reports

Results from each of the receiving water or outfall based monitoring station conducted in accordance with standard operating procedures shall be sent electronically to the Regional Board's stormwater site at MS4stormwaterRB4@waterboards.ca.gov. Analytical data reports are required to be submitted on a semi-annual basis and will include the following:

- Exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds.
- Corresponding sample dates and monitoring locations.

Semi-annual data reports will be submitted June 15 and December 15 of each year. The mid-year data reports will cover the monitoring period of July 1 through December 31. The December data report will cover January 1 through June 30.

11.2 MONITORING REPORTS

Annual monitoring reports will be submitted by December 15 of each year. The annual monitoring reports will cover the monitoring period of October 1 through September 30. The annual monitoring reports will include the following:

- Watershed summary information
- Watershed management area
- Subwatershed (HUC-12) descriptions
- Description of permittee(s) drainage area within the subwatershed
- Annual assessment and reporting
- Stormwater control measures
- Effectiveness assessment of stormwater control measures
- Non-stormwater water control measures
- Effectiveness assessment of non-stormwater control measures
- Integrated monitoring compliance report
- Adaptive management strategies
- Supporting data and information

Details on the reporting requirements from the MRP that will be submitted with the semi-annual analytical data reports and annual monitoring reports are presented in **Attachment D**. In addition to the requirements from the MRP, a discussion of how the reported data are to be used is included in **Attachment D**.

11.3 DATA MANAGEMENT

The acceptability of data is determined through data verification and data validation. In addition to the programmatic data quality objectives, the standard data validation procedures documented in the subcontracted laboratory's quality assurance (QA) manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory's QA officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Decisions to reject or qualify data will be made, based on the evaluation of field and laboratory quality control data. Data verification is the process of checking required methods and procedures have been followed at all stages of the data collection process, including: collection, receipt, preparation, and analysis of samples; and review of generated results for completeness. Data validation is the process to determine if project requirements are met, including: obtaining the documents and records produced during data verification and evaluating the quality of the data generated by the laboratory equipment to evaluate the acceptability of the analytical results as representative measures of the conditions in the original sample.

The field log and analytical data generated will be converted to a standard database format. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the database.

Details of the data management protocols are provided in **Attachment D**.

12 Schedule for CIMP Implementation

The CIMP will become effective July 1, 2015, or 90 days after approval by the Executive Officer of the Regional Board whichever is later. However, new and redevelopment effectiveness tracking will begin no later than the date of Draft WMP submittal (June 28, 2014).

During the CIMP approval process all existing monitoring will continue. Within 90 days of CIMP approval, sample collection for all constituents at all dry and existing wet weather receiving water sites will commence. The remaining monitoring will be affected by the feasibility of collecting a sample within 90 days of CIMP approval. The two primary factors affecting the feasibility of sample collection upon approval of this CIMP relate to (1) auto-sampler installation and (2) monitoring that is dependent upon prerequisite information (e.g., monitoring of significant non-stormwater discharges).

The process for installing auto-samplers includes numerous tasks that require multiple agency coordination and permitting. Numerous auto-sampler stations have been installed throughout the County and provide significant experience in understanding the challenges and timelines for designing, permitting, and installing auto-sampler stations. The following provides an overview of the tasks and timelines associated with auto-sampler installation and what would be considered a relatively straightforward installation timeframe:

- Detailed auto-sampler site configuration/design, which includes data collection and review, identification of permit requirements, concept design, development of summary technical memos, and review by participating agencies and associated divisions: 12 months.
- Obtaining permits from one or more of the following entities: Army Corps of Engineers, LACFCD, United States Fish and Wildlife Service, California Department of Fish and Game, California Coastal Commission, and the Regional Board: 3 to 10 months.
- Purchase of equipment via contractor or via agency procurement process (can occur somewhat concurrently with permitting): 2 to 6 months.
- Connecting to power via an upgrade to existing service or establishing new service: 1 to 6 months.
- Construction of monitoring station assuming no bid/award process: 1 month.
- Total time: 18 to 30 months.

Phasing in the receiving water and stormwater outfall elements of this CIMP will allow evaluation of the sites to determine if any need to be changed due to significant contributions from non-MS4 sources or other reasons that sampling is not feasible at a site requiring an alternate or a new site.

Phase I of the CIMP Implementation:

- Fiscal Year 2014-2015.
- Non-stormwater screening.
- Determination of significant non-stormwater outfalls.
- Dry weather monitoring at all locations (beginning July 1, 2015 or 90 days after CIMP approval; whichever is later.)

Phase II of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2015-2016.
- Installation of LTA receiving water site.
- Installation of 1 stormwater outfall site.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase III of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2016-2017.
- Installation of 1 TMDL receiving water site.
- Installation of 1 stormwater outfall site.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase IV of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2017-2018.
- Installation of 1 TMDL receiving water site.
- Installation of 1 stormwater outfall site.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.
- Installation of optional TMDL receiving water site as necessary.

13 References

Regional Board, 2013. Final Staff Report for the Implementation Plans and Schedules for the Los Cerritos Channel and San Gabriel River Metals TMDLs.

Regional Board, 2011. Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters. Attachment A to Resolution No. R11-008. Adopted May 5, 2011. Effective March 23, 2012.

Regional Board, 2012. Water Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4s) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4. Order No. R4-2012-0175. NPDES No. CAS004001. December 6

USEPA, 2007. Total Maximum Daily Loads for Metals and Selenium – San Gabriel River and Impaired Tributaries. USEPA Region 9. March 26, 2007.

USEPA, 2012. Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs. USEPA Region 9. March 26, 2012.

Attachment A

Middle Santa Ana River Water Quality Monitoring Plan

City of Claremont:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Claremont.pdf

City of Pomona:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Pomona.pdf

Attachment B

Monitoring Location Fact Sheets

B-1 Receiving Water Sites

B-1.1 Live Oak Wash Long Term Assessment Site

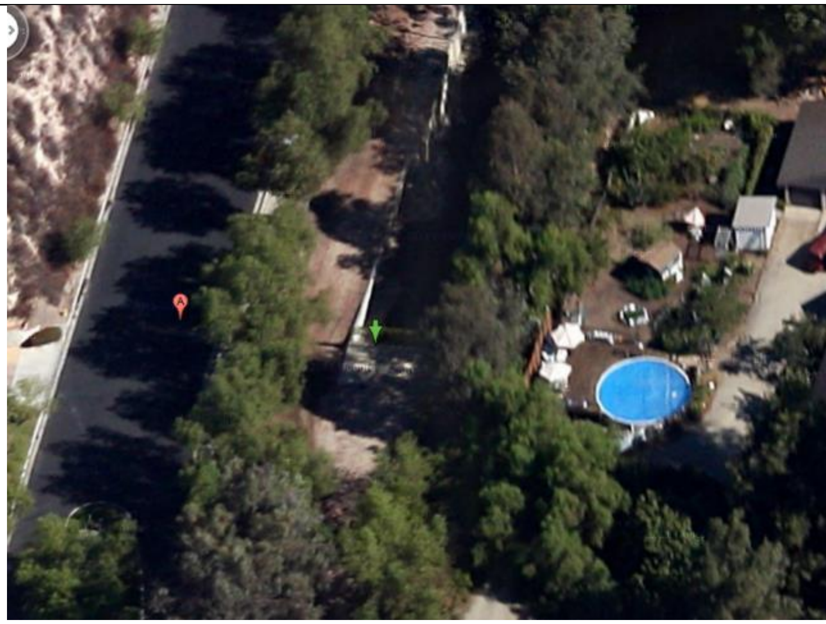
Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
Live Oak Wash	Tributary	ESGV_LOW_DS	N/A	LTA, TMDL	34.094064	-117.792934

General Description: LTA monitoring site located upstream of where Live Oak Wash discharges into Puddingstone Reservoir and downstream of the confluence of all major tributaries with Live Oak Wash. Because Live Oak Wash is a soft-bottomed channel and irregularly shaped at the location of the LTA monitoring site, flow will be measured upstream of the LTA monitoring site within Puddingstone Channel, Marshal Creek, and at Live Oak Wash upstream of the confluence of these tributaries.

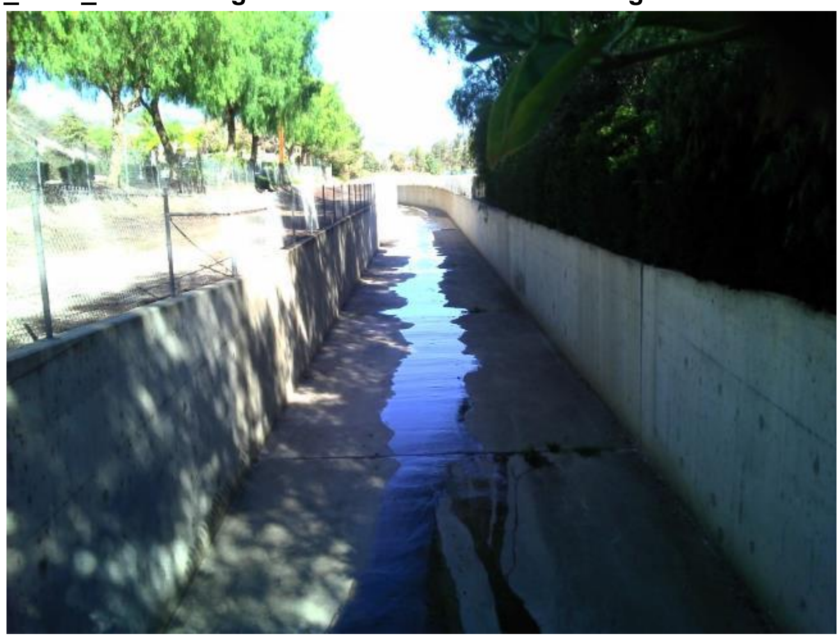
ESGV_LOW_DS Aerial View

ESGV_LOW_DS Looking Upstream

ESGV_LOW_DS Looking Downstream

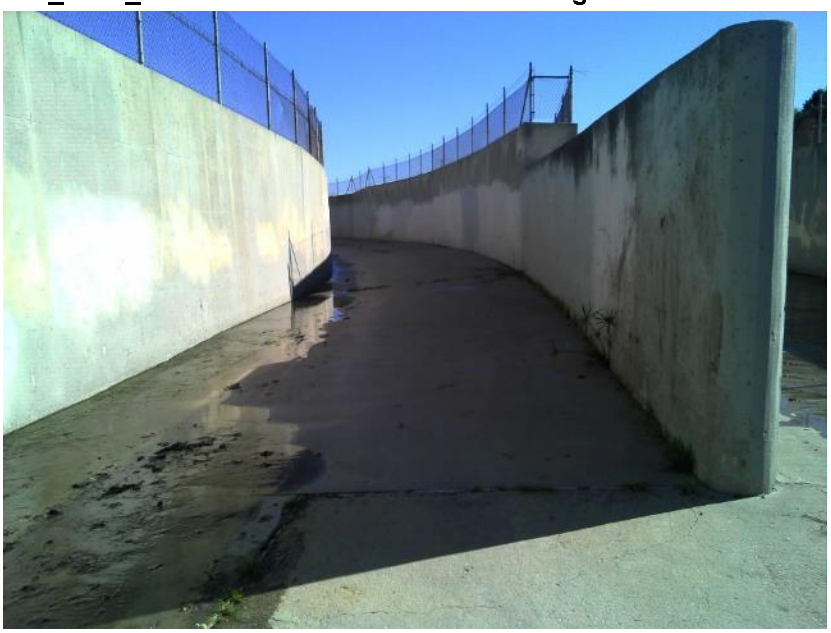


ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Aerial View



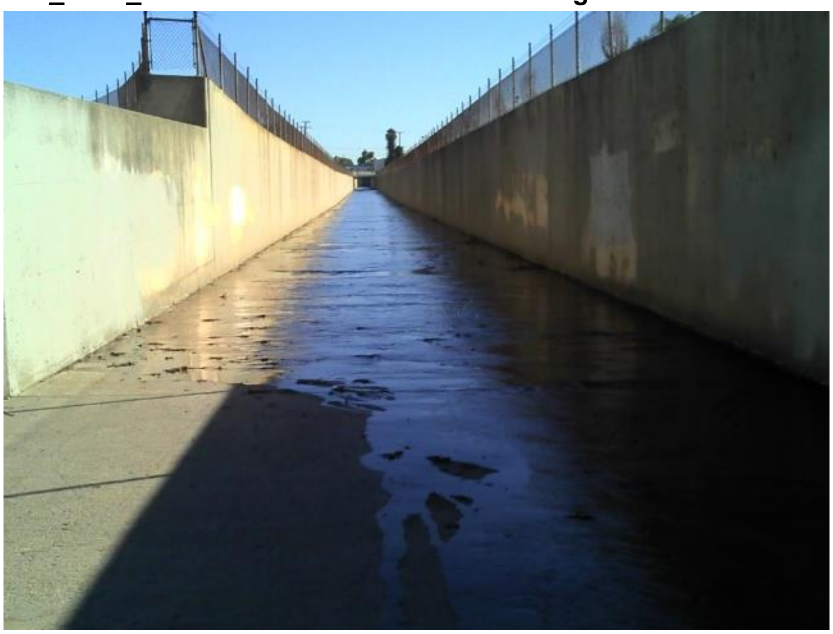
ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Looking Upstream

ESGV_LOW_DS Marshall Creek Flow Monitoring Location Aerial View



ESGV_LOW_DS Marshall Creek Flow Monitoring Location Looking Upstream

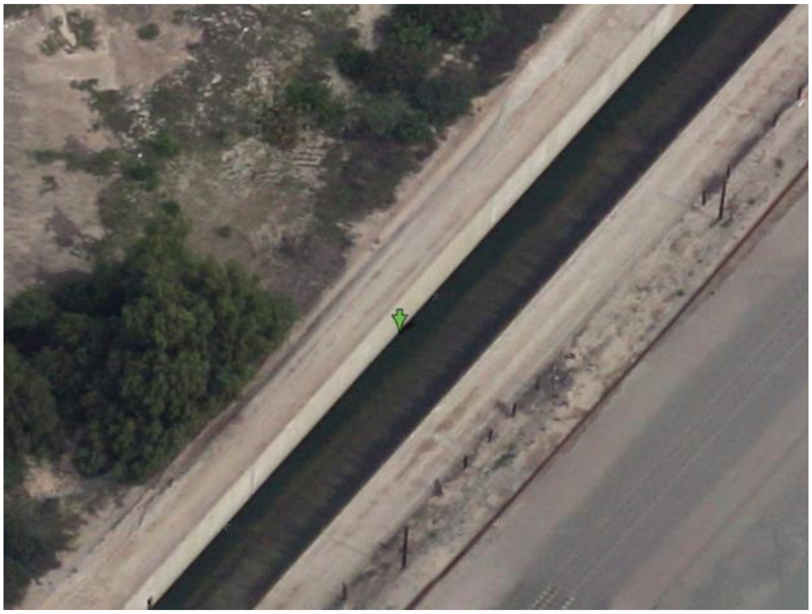
ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Aerial View



ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Looking Upstream

B-1.2 San Jose Creek TMDL site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Jose Creek	Tributary	ESGV_SJC_DS	N/A	TMDL	34.032233	-117.824894
General Description: TMDL monitoring site located at the downstream intersection of San Jose Creek and the ESGV Group's jurisdictional boundary.						



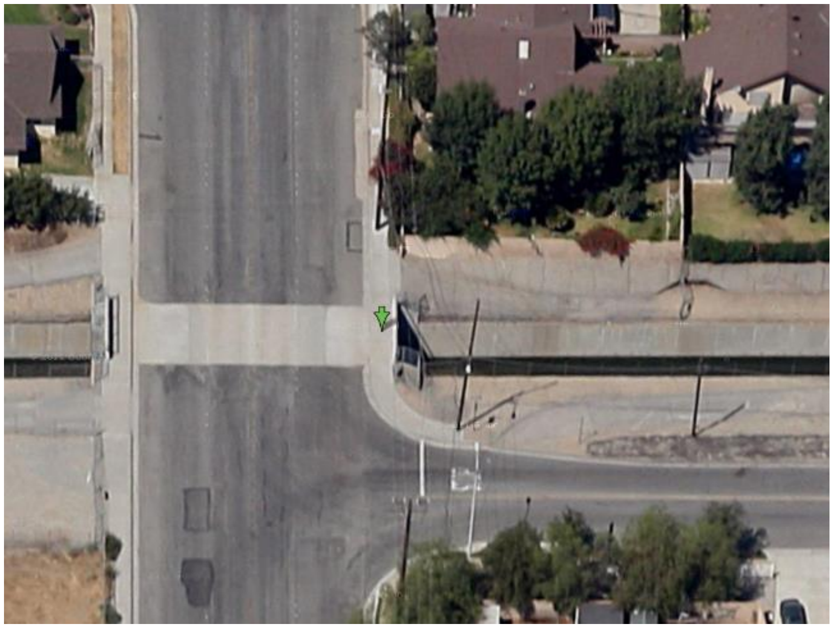
ESGV_SJC_DS Aerial View

ESGV_SJC_DS Looking Upstream

B-1.3 San Dimas Wash Special Study Assessment site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_SDW_DS	N/A	TMDL	34.121341	-117.820088

General Description: TMDL monitoring site located at the downstream intersection of San Dimas Wash and the ESGV Group's jurisdictional boundary.



ESGV_SDW_DS Aerial View

ESGV_SDW_DS Looking Downstream

B-1.4 Walnut Creek Wash Optional TMDL Site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_WCW_DS	N/A	TMDL	34.086672	-117.845592

General Description: TMDL monitoring site located at the downstream of Puddingstone Dam and upstream of the ESGV Group's jurisdictional boundary.

ESGV_SDW_DS Looking Downstream

B-2 Stormwater Outfall Sites

B-2.1 MTD 766

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	SW Outfall	34.12417	-117.80215

General Description: New SW outfall monitoring site discharging to San Dimas Wash just upstream of Foothill Blvd. Receives drainage from San Dimas and La Verne. Primary land use types include: 89% residential; 10% commercial/industrial; and 1% agricultural.

MTD 766 Aerial View

MTD 766

B-2.2 BI 0566 Line A

HUC-12 Equivalent	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	SW Outfall	34.09926	-117.75468
General Description: New SW outfall monitoring site discharging to Thompson Wash upstream of Bonita Ave. Receives drainage from Pomona and Claremont. Primary land use types include: 83% residential; 15% commercial/industrial; and 2% open space.						

BI 0566 Line A Aerial View

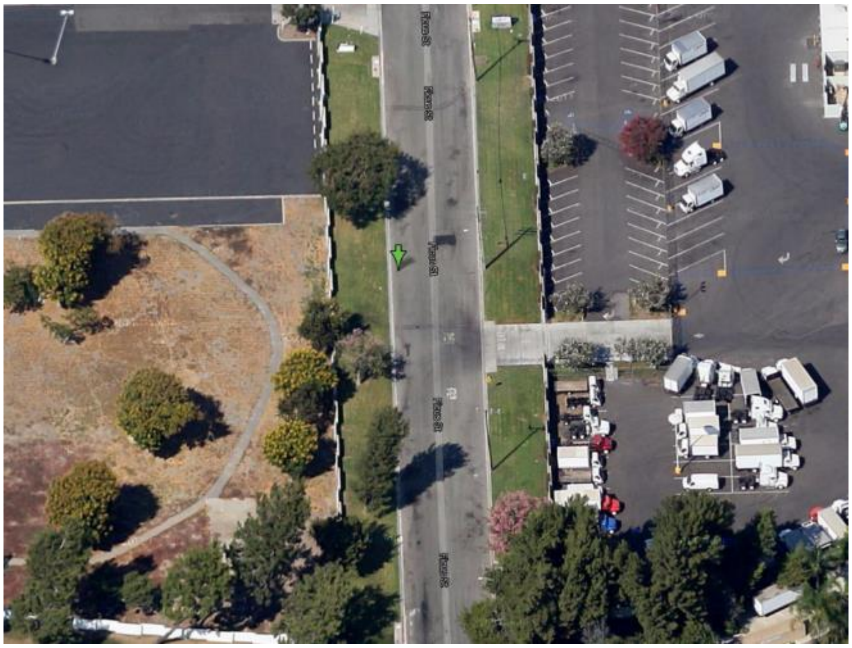
BI 0566 Line A

RB-AR3645

B-2.3 San Antonio Drain Unit 1

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	SW Outfall	34.01976	-117.73575

General Description: New SW outfall monitoring site discharging to Chino Creek. Located on Ficus St north of Riverside Dr at nearest manhole upstream of outfall. Receives drainage from Pomona. Primary land use types include: 67% residential; 31% commercial/industrial; and 2% open space.



San Antonio Drain Unit 1 Aerial View

San Antonio Drain Unit 1 Looking South Towards Outfall

Attachment C

Table E-2 of the Monitoring and Reporting Program

Table E-2 of the Monitoring and Reporting Program

CONSTITUENTS
CONVENTIONAL POLLUTANTS
Oil and Grease
Total Phenols
Cyanide
pH
Temperature
Dissolved Oxygen
BACTERIA
Fecal Coliform
E. coli
GENERAL
Dissolved Phosphorus
Total Phosphorus
Turbidity
Total Suspended Solids
Total Dissolved Solids
Volatile Suspended Solids
Total Organic Carbon
Total Petroleum Hydrocarbon
Biochemical Oxygen Demand
Chemical Oxygen Demand
Total Ammonia-Nitrogen
Total Kjeldahl Nitrogen
Nitrate-Nitrogen
Alkalinity
Specific Conductance
Total Hardness
MBAS
Chloride
Fluoride
Methyl tertiary butyl ether (MTBE)

CONSTITUENTS
Perchlorate
METALS
Aluminum
Antimony
Arsenic
Beryllium
Cadmium
Chromium (total)
Chromium (Hexavalent)
Iron
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc
SEMIVOLATILE ORGANIC COMPOUNDS
Acids
2-Chlorophenol
4-Chloro-3-methylphenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol
Base/Neutral
Acenaphthene
Acenaphthylene

CONSTITUENTS
Anthracene
Benzidine
1,2 Benzanthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
3,4 Benzofluoranthene
Benzo(k)fluoranthene
Bis(2-Chloroethoxy) methane
Bis(2-Chloroisopropyl) ether
Bis(2-Chloroethyl) ether
Bis(2-Ethylhexl) phthalate
4-Bromophenyl phenyl ether
Butyl benzyl phthalate
2-Chloroethyl vinyl ether
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Chrysene
Dibenzo(a,h)anthracene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
3,3-Dichlorobenzidine
Diethyl phthalate
Dimethyl phthalate
di-n-Butyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
4,6 Dinitro-2-methylphenol
1,2-Diphenylhydrazine
di-n-Octyl phthalate
Fluoranthene
Fluorene
Hexachlorobenzene

CONSTITUENTS
Hexachlorobutadiene
Hexachloro-cyclopentadiene
Hexachloroethane
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-dimethyl amine
N-Nitroso-diphenyl amine
N-Nitroso-di-n-propyl amine
Phenanthrene
Pyrene
1,2,4-Trichlorobenzene
CHLORINATED PESTICIDES
Aldrin
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (lindane)

CONSTITUENTS
alpha-chlordane
gamma-chlordane
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dieldrin
alpha-Endosulfan
beta-Endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor Epoxide
Toxaphene
POLYCHLORINATED BIPHENYELS
Aroclor-1016
Aroclor-1221
Aroclor-1232

CONSTITUENTS
Aroclor-1242
Aroclor-1248
Aroclor-1254
Aroclor-1260
ORGANOPHOSPHATE PESTICIDES
Atrazine
Chlorpyrifos
Cyanazine
Diazinon
Malathion
Prometryn
Simazine
HERBICIDES
2,4-D
Glyphosate
2,4,5-TP-SILVEX

Attachment D

Analytical and Monitoring Procedures

Attachment D details the monitoring procedures that will be utilized to collect and analyze samples to meet the goals and objectives of the CIMP and the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful sample collection and analysis. The attachment is divided into the following sections:

1. Analytical Procedures
2. Sampling Methods and Sample Handling
3. Quality Assurance/Quality Control
4. Instrument/Equipment Calibration and Frequency
5. Monitoring Procedures References

D-1 ANALYTICAL PROCEDURES

The following subsections detail the analytical procedures for data generated in the field and in the laboratory.

D-1.1 Field Parameters

Portable field meters will measure field parameters within specifications outlined in **Table D-1**.

Table D-1.
Analytical Methods and Project Reporting Limits for Field Parameters

Parameter	Method	Range	Project RL
Current velocity	Electromagnetic	-0.5 to +20 ft/s	0.05 ft/s
pH	Electrometric	0 – 14 pH units	NA
Temperature	High stability thermistor	-5 – 50 oC	NA
Dissolved oxygen	Membrane	0 – 50 mg/L	0.5 mg/L
Turbidity	Nephelometric	0 – 3000 NTU	0.2 NTU
Conductivity	Graphite electrodes	0 – 10 mmhos/cm	2.5 umhos/cm

RL – Reporting Limit NA – Not applicable

D-1.2 Analytical Methods and Method Detection and Reporting Limits

Method detection limits (MDL) and reporting limits (RLs) must be distinguished for proper understanding and data use. The MDL is the minimum analyte concentration that can be measured and reported with a 99% confidence that the concentration is greater than zero. The RL represents the concentration of an analyte that can be routinely measured in the sampled matrix within stated limits and with confidence in both identification and quantitation.

For this CIMP, RLs must be verifiable by having the lowest non-zero calibration standard or calibration check sample concentration at or less than the RL. RLs have been established in this CIMP based on the verifiable levels and general measurement capabilities demonstrated for each

method. These RLs should be considered as maximum allowable RLs to be used for laboratory data reporting. Note that samples diluted for analysis may have sample-specific RLs that exceed these RLs. This will be unavoidable on occasion. However, if samples are consistently diluted to overcome matrix interferences, the analytical laboratory will be required to notify the ESGV Group regarding how the sample preparation or test procedure in question will be modified to reduce matrix interferences so that project RLs can be met consistently.

Analytical methods and RLs required for samples analyzed in the laboratory are summarized in **Table D-2** and **Table D-3** for analysis in water, sediment, and tissue, respectively. For organic constituents, environmentally relevant detection limits will be used to the extent practicable. The RLs listed in **Table D-2** are consistent with the requirements of the available minimum levels provided in the MRP, except for total dissolved solids, which was set equal to the minimum level identified in the California State Water Resources Control Board's Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Project Plan. Alternative methods with RLs that are at or below those presented in **Table D-2** and **Table D-3** are considered equivalent and can be used in place of the methods presented in **Table D-2** and **Table D-3**.

Prior to the analysis of any environmental samples, the laboratory must have demonstrated the ability to meet the minimum performance requirements for each analytical method presented in **Table D-2** and **Table D-3**. The initial demonstration of capability includes the ability to meet the project RLs, the ability to generate acceptable precision and accuracy, and other analytical and quality control parameters documented in this CIMP. Data quality objectives for precision and accuracy are summarized in **Table D-4**.

Table D-2.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Water Samples

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
Toxicity				
Pimephales promelas	EPA-821-R-02-013 (1000.0) and EPA-821-R-02-012 (2000.0)	NA	NA	NA
Ceriodaphnia dubia	EPA-821-R-02-013 (1002.0) and EPA-821-R-02-012 (2002.0)	NA	NA	NA
Selenastrum capricornutum	EPA-821-R-02-013 (1003.0)	NA	NA	NA
Bacteria				
Escherichia coli	SM 9221	MPN/100mL	10	235
Conventionals				

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Oil and Grease	EPA 1664A	mg/L	5	5
Cyanide	SM 4500-CN E	mg/L	0.005	0.005
pH	SM 4500 H+B/ EPA 9040/ EPA 9045D	NA	NA	0-14
Dissolved Oxygen	NA	mg/L	0.5	Sensitivity to 5 mg/L
Specific Conductance	EPA 120.1	µs/cm	1	1
Turbidity	EPA 180.1	NTU	0.1	0.1
Total Hardness	SM 2340C	mg/L	2	2
Dissolved Organic Carbon	SM 5310B	mg/L	0.6	NA
Total Organic Carbon	SM 5310B	mg/L	1	1
Total Petroleum Hydrocarbon	EPA 1664	mg/L	5	5
Biochemical Oxygen Demand	SMOL-5210	mg/L	5	2
Chemical Oxygen Demand	SM 5220D	mg/L	20	20-900
MBAS	SM 5540C	mg/L	0.5	0.5
Chloride	EPA 300.0	mg/L	1	2
Fluoride	EPA 300.0	mg/L	0.1	0.1
Sulfate	EPA 375.4	mg/L	1	NA
Perchlorate	EPA 314.0	µg/L	4	4
Chlorophyll a	SM 10200 H	mg/L	0.01	NA
Dissolved Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Total Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Orthophosphate-P	EPA 300.0	mg/L	0.2	NA
Ammonia (as N)	SM 4500-NH3 C	mg/L	0.1	0.1
Nitrate + Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrate (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Total Kjehdahl Nitrogen (TKN)	SM 4500-NH3 C	mg/L	0.1	0.1
Total Alkalinity	SM 2320B	mg/L	2	2
Solids				
Suspended Sediment Concentration (SSC)	ASTMD 3977-97	mg/L	3	NA
Total Suspended Solids (TSS)	SM 2540D	mg/L	2	2
Total Dissolved Solids (TDS)	SM 2540C	mg/L	10	2

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Volatile Suspended Solids	EPA 1684	mg/L	1	2
Metals in Freshwater (dissolved and total)				
Aluminum	EPA 200.8	µg/L	100	100
Antimony	EPA 200.8	µg/L	0.5	0.5
Arsenic	EPA 200.8	µg/L	1	1
Beryllium	EPA 200.8	µg/L	0.5	0.5
Cadmium	EPA 200.8	µg/L	0.25	0.25
Chromium (total)	EPA 200.8	µg/L	0.5	0.5
Chromium (Hexavalent)	EPA 200.8	µg/L	5	5
Copper	EPA 200.8	µg/L	0.5	0.5
Iron	EPA 200.8	µg/L	100	100
Lead	EPA 200.8	µg/L	0.5	0.5
Mercury	EPA 1631	µg/L	0.5	0.5
Nickel	EPA 200.8	µg/L	1	1
Selenium	EPA 200.8	µg/L	1	1
Silver	EPA 200.8	µg/L	0.25	0.25
Thallium	EPA 200.8	µg/L	1	1
Zinc	EPA 200.8	µg/L	1	1
Organochlorine Pesticides				
Aldrin	EPA 608	ng/L	5	5
alpha-BHC	EPA 608	ng/L	10	10
beta-BHC	EPA 608	ng/L	5	5
delta-BHC	EPA 608	ng/L	5	5
gamma-BHC (Lindane)	EPA 608	ng/L	20	20
Chlordane-alpha	EPA 608	ng/L	100	100
Chlordane-gamma	EPA 608	ng/L	100	100
Oxychlordane	EPA 608	ng/L	200	NA
Cis-nonachlor	EPA 608	ng/L	200	NA
Trans-nonachlor	EPA 608	ng/L	200	NA
2,4'-DDD	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDE	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDT	EPA 625/ 8270C	ng/L	2	NA

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
4,4'-DDD	EPA 625/ 8270C	ng/L	50	50
4,4'-DDE	EPA 625/ 8270C	ng/L	50	50
4,4'-DDT	EPA 625/ 8270C	ng/L	10	10
Dieldrin	EPA 608	ng/L	10	10
Endosulfan I	EPA 608	ng/L	20	20
Endosulfan II	EPA 608	ng/L	10	10
Endosulfan Sulfate	EPA 608	ng/L	50	50
Endrin	EPA 608	ng/L	10	10
Endrin Aldehyde	EPA 608	ng/L	10	10
Heptachlor	EPA 608	ng/L	10	10
Heptachlor Epoxide	EPA 608	ng/L	10	10
Toxaphene	EPA 608	ng/L	500	500
PCBs				
Congeners(2)	EPA 625/ 8270C	ng/L	2	NA
Aroclors (1016, 1221, 1232, 1242, 1248, 1254, 1260)	EPA 608/ 625/ 8270C	ng/L	500	500
Organophosphorus Pesticides				
Chlorpyrifos	EPA 614	ng/L	50	50
Diazinon	EPA 614	ng/L	10	10
Malathion	EPA 614	ng/L	1000	1000
Triazine				
Atrazine	EPA 530	µg/L	2	2
Cyanazine	EPA 530	µg/L	2	2
Prometryn	EPA 530	µg/L	2	2
Simazine	EPA 530	µg/L	2	2
Dioxins				
2,3,7,8-TCDD	EPA 1613	ng/L	0.005	NA
1,2,3,7,8-PeCDD	EPA 1613	ng/L	0.025	NA
1,2,3,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
2,3,4,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDD	EPA 1613	ng/L	0.025	NA

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
1,2,3,7,8,9-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,7,8,9-HxCDF	EPA 1613	ng/L	0.025	NA
2,3,4,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8,9-HpCDF	EPA 1613	ng/L	0.025	NA
OCDD	EPA 1613	ng/L	0.025	NA
OCDF	EPA 1613	ng/L	0.050	NA
Herbicides				
2,4-D	EPA 8151A	µg/L	10	10
Glyphosate	EPA 547	µg/L	5	5
2,4,5-TP-SILVEX	EPA 8151A	µg/L	0.5	0.5
Semivolatile Organic Compounds (SVOCs)				
1,2-Diphenylhydrazine	EPA 625	µg/L	1	1
2,4,6-Trichlorophenol	EPA 625	µg/L	10	10
2,4-Dichlorophenol	EPA 625	µg/L	1	1
2,4-Dimethylphenol	EPA 625	µg/L	2	2
2,4-Dinitrophenol	EPA 625	µg/L	5	5
2,4-Dinitrotoluene	EPA 625	µg/L	5	5
2,6-Dinitrotoluene	EPA 625	µg/L	5	5
2-Chloronaphthalene	EPA 625	µg/L	10	10
2-Chlorophenol	EPA 625	µg/L	2	2
2-Methyl-4,6-dinitrophenol	EPA 625	µg/L	5	5
2-Nitrophenol	EPA 625	µg/L	10	10
3,3'-Dichlorobenzidine	EPA 625	µg/L	5	5
4-Bromophenyl phenyl ether	EPA 625	µg/L	5	5
4-Chloro-3-methylphenol	EPA 625	µg/L	1	1
4-Chlorophenyl phenyl ether	EPA 625	µg/L	5	5
4-Nitrophenol	EPA 625	µg/L	5	5
Acenaphthene	EPA 625	µg/L	1	1

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
Acenaphthylene	EPA 625	µg/L	2	2
Anthracene	EPA 625	µg/L	2	2
Benzidine	EPA 625	µg/L	5	5
Benzo(a)anthracene	EPA 625	µg/L	5	5
Benzo(a)pyrene	EPA 625	µg/L	2	2
Benzo(b)fluoranthene	EPA 625	µg/L	10	10
Benzo(g,h,i)perylene	EPA 625	µg/L	5	5
Benzo(k)fluoranthene	EPA 625	µg/L	2	2
Benzyl butyl phthalate	EPA 625	µg/L	10	10
bis(2-Chloroethoxy) methane	EPA 625	µg/L	5	5
bis(2-Chloroisopropyl) ether	EPA 625	µg/L	2	2
bis(2-Chloroethyl) ether	EPA 625	µg/L	1	1
bis(2-Ethylhexyl) phthalate	EPA 625	µg/L	5	5
Chrysene	EPA 625	µg/L	5	5
Dibenzo(a,h)anthracene	EPA 625	µg/L	0.1	0.1
Diethyl phthalate	EPA 625	µg/L	2	2
Dimethyl phthalate	EPA 625	µg/L	2	2
Di-n-butylphthalate	EPA 625	µg/L	10	10
Di-n-octylphthalate	EPA 625	µg/L	10	10
Fluoranthene	EPA 625	µg/L	0.05	0.05
Fluorene	EPA 625	µg/L	0.1	0.1
Hexachlorobenzene	EPA 625	µg/L	1	1
Hexachlorobutadiene	EPA 625	µg/L	1	1
Hexachloro-cyclo pentadiene	EPA 625	µg/L	5	5
Hexachloroethane	EPA 625	µg/L	1	1
Indeno(1,2,3-cd)pyrene	EPA 625	µg/L	0.05	0.05
Isophorone	EPA 625	µg/L	1	1
Naphthalene	EPA 625	µg/L	0.2	0.2
Nitrobenzene	EPA 625	µg/L	1	1
N-Nitroso-dimethyl amine	EPA 625	µg/L	5	5
N-Nitrosodiphenylamine	EPA 625	µg/L	1	1
N-Nitroso-di-n-propyl amine	EPA 625	µg/L	5	5

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Pentachlorophenol	EPA 625	µg/L	2	2
Phenanthrene	EPA 625	µg/L	0.05	0.05
Total Phenols	EPA 625	mg/L	0.2	0.1
Phenol	EPA 625	µg/L	1	1
Pyrene	EPA 625	µg/L	0.05	0.05
Volatile Organic Compounds				
1,2,4-Trichlorobenzene	EPA 625	µg/L	1	1
1,2-Dichlorobenzene	EPA 625	µg/L	1	1
1,3-Dichlorobenzene	EPA 625	µg/L	1	1
1,4-Dichlorobenzene	EPA 625	µg/L	1	1
2-Chloroethyl vinyl ether	EPA 625	µg/L	1	1
Methyl tert-butyl ether (MTBE)	EPA 625	µg/L	1	1

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCB congeners includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-3.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Sediment

Parameter/Constituent	Method(1)	Units	Project RL
General Parameters			
% Solids	EPA 1684	%	NA
Total Organic Carbon (TOC)	SM5310B	% Dry Weight	0.05
Chlordane Compounds			
alpha-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
gamma-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
Oxychlordane	USEPA 8081A/8270C	ng/dry g	0.5
trans-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
cis-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
Other OC Pesticides			
2,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
Total DDT	USEPA 8081A/8270C	ng/dry g	NA
Dieldrin	USEPA 8081A/8270C	ng/dry g	0.02
PAHs			
1-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
1-Methylphenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
2-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
2,6-Dimethylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Acenaphthene	USEPA 8270C/8270D - SIM	ng/dry g	20
Anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(e)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Biphenyl	USEPA 8270C/8270D - SIM	ng/dry g	20
Chrysene	USEPA 8270C/8270D - SIM	ng/dry g	20
Dibenz(a,h)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Fluoranthene	USEPA 8270C/8270D - SIM	ng/dry g	20

Parameter/Constituent	Method(1)	Units	Project RL
Fluorene	USEPA 8270C/8270D - SIM	ng/dry g	20
Naphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Perylene	USEPA 8270C/8270D - SIM	ng/dry g	20
Phenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Total PCBs(2)	USEPA 8270C/8270D-SIM	ng/dry g	0.2
Metals			
Cadmium	EPA 6020	µg/dry g	0.05
Copper	EPA 6020	µg/dry g	0.05
Lead	EPA 6020	µg/dry g	0.05
Silver	EPA 6020	µg/dry g	0.05
Zinc	EPA 6020	µg/dry g	0.05

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCBs includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-4.
Data Quality Objectives

Parameter	Accuracy	Precision	Recovery	Completeness
Field Measurements				
Water Velocity (for Flow calc.)	2%	NA	NA	90%
pH	+ 0.2 pH units	+ 0.5 pH units	NA	90%
Temperature	+ 0.5 oC	+ 5%	NA	90%
Dissolved Oxygen	+ 0.5 mg/L	+ 10%	NA	90%
Turbidity	10%	10%	NA	90%
Conductivity	5%	5%	NA	90%
Laboratory Analyses – Water				
Conventionals and Solids	80 – 120%	0 – 25%	80 – 120%	90%
Aquatic Toxicity	(1)	(2)	NA	90%
Nutrients(3)	80 – 120%	0 – 25%	90 – 110%	90%
Metals(3)	75 – 125%	0 – 25%	75 – 125%	90%
Dioxin(3)	50 – 150%	0 – 25%	50 – 150%	90%
Semi-Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Triazines(3)	50 – 150%	0 – 25%	50 – 150%	90%
Herbicides(3)	50 – 150%	0 – 25%	50 – 150%	90%
OC Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Congeners(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Aroclors(3)	50 – 150%	0 – 25%	50 – 150%	90%
OP Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
Laboratory Analyses – Sediment				
% Solids	NA	NA	NA	90%
Total Organic Carbon (TOC)	80 – 120%	0 – 25%	80 – 120%	90%
OC Pesticides(3)	25 – 140%	0 – 30%	25 – 140%	90%
PCB Congeners(3)	60 – 125%	0 – 30%	60 – 125%	90%
PAHs(3)	50 – 150%	0 – 25%	50 – 150%	90%
Metals(3)	60 – 130%	0 – 30%	60 – 130%	90%
Laboratory Analyses – Tissue				
Chlordane(3)	50 – 150%	0 – 25%	50 – 150%	90%
DDTs(3)	35 – 140%	0 – 30%	35 – 140%	90%

Dieldrin(3)	50 – 150%	0 – 25%	50 – 150%	90%

1. Must meet all method performance criteria relative to the reference toxicant test.
2. Must meet all method performance criteria relative to sample replicates.
3. See **Table D-2** and **Table D-3**for a list of individual constituents in each suite for water, sediment, and tissue, respectively.

D-1.3 Method Detection Limit Studies

Any laboratory performing analyses under this program must routinely conduct MDL studies to document that the MDLs are less than or equal to the project-specified RLs. If any analytes have MDLs that do not meet the project RLs, the following steps must be taken:

- Perform a new MDL study using concentrations sufficient to prove analyte quantitation at concentrations less than or equal to the project-specified RLs per the procedure for the Determination of the Method Detection Limit presented in Revision 1.1, 40 Code of Federal Regulations (CFR) 136, 1984.
- No samples may be analyzed until the issue has been resolved. MDL study results must be available for review during audits, data review, or as requested. Current MDL study results must be reported for review and inclusion in project files.

An MDL is developed from seven aliquots of a standard containing all analytes of interest spiked at five times the expected MDL. These aliquots are processed and analyzed in the same manner as environmental samples. The results are then used to calculate the MDL. If the calculated MDL is less than 0.33 times the spiked concentration, another MDL study should be performed using lower spiked concentrations.

D-1.4 Project Reporting Limits

Laboratories generally establish RLs that are reported with the analytical results—these may be called reporting limits, detection limits, reporting detection limits, or several other terms by the reporting laboratory. These laboratory limits must be less than or equal to the project RLs listed in **Table D-2**. Wherever possible, project RLs are lower than the relevant numeric criteria or toxicity thresholds. Laboratories performing analyses for this project must have documentation to support quantitation at the required levels.

D-1.5 Laboratory Standards and Reagents

All stock standards and reagents used for standard solutions and extractions must be tracked through the laboratory. The preparation and use of all working standards must be documented according to procedures outlined in each laboratory's Quality Assurance (QA) Manual; standards must be traceable according to USEPA, A2LA or National Institute for Standards and Technology (NIST) criteria. Records must have sufficient detail to allow determination of the identity, concentration, and viability of the standards, including any dilutions performed to obtain the working standard. Date of preparation, analyte or mixture, concentration, name of preparer, lot or cylinder number, and expiration date, if applicable, must be recorded on each working standard.

D-1.6 Sample Containers, Storage, Preservation, and Holding Times

Sample containers must be pre-cleaned and certified free of contamination according to the USEPA specification for the appropriate methods. Sample container, storage and preservation, and holding time requirements are provided in **Table D-5**. The analytical laboratories will supply sample containers that already contain preservative (**Table D-5**), including ultra-pure hydrochloric and nitric acid, where applicable. After collection, samples will be stored at 4°C until arrival at the contract laboratory.

Table D-5.
Sample Container, Sample Volume, Initial Preservation, and Holding Time Requirements for Parameters Analyzed at a Laboratory

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
Water				
Toxicity				
Initial Screening	Glass or FLPE-lined jerrican	40 L	Store at 4°C	36 hours(2)
Follow-Up Testing				
Phase I TIE				
E. coli (fresh)	PE	120 mL	Na2S2O3 and Store at 4°C	8 hours
Oil and Grease	PE	250 mL	HCl and Store at 4°C	28 days
Chlorophyll a	Amber PE	1 L	Store at 4°C	Filter w/in 48 hours, 28 days
Cyanide	PE	1 L	NaOH and Store at 4°C	14 days
Dissolved Organic Carbon (DOC)	PE	250 mL	Store at 4°C	Filter/28 days
Total Organic Carbon (TOC)	PE	250 mL	H2SO4 and Store at 4°C	28 days
Total Petroleum Hydrocarbon	Glass	1 L	HCl or H2SO4 and Store at 4°C	7/40 days(3)
Biochemical Oxygen Demand	PE	1L	Store at 4°C	48 hours
Chemical Oxygen Demand	PE	500 mL	H2SO4 and Store at 4°C	28 days
MBAS	PE	1 L	Store at 4°C	48 hours
Fluoride	PE	500 mL	None required	28 days

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
Chloride	PE	250 mL	Store at 4°C	28 days
Sulfate				28 days
Boron	PE	250-mL	Store at 4°C	180 days
Perchlorate	PE	500 mL	Store at 4°C	28 days
Nitrate Nitrogen	PE	250 mL	Store at 4°C	48 hours
Nitrite Nitrogen				
Orthophosphate-P				
Ammonia Nitrogen	Glass	250-mL	H2SO4 and Store at 4°C	28 days
Total and Dissolved Phosphorus				
Organic Nitrogen				
Nitrate + Nitrite (as N)				
Total Kjehdahl Nitrogen (TKN)	PE	250 mL	H2SO4 and Store at 4°C	28 days
Total Alkalinity	PE	500 mL	Store at 4°C	14 days
Suspended Sediment Concentration (SSC)	PE	250 mL	Store at 4°C	120 days
Total Suspended Solids (TSS)	PE	250 mL	Store at 4°C	7 days
Total Dissolved Solids (TDS)	PE	250 mL	Store at 4°C	7 days
Volatile Suspended Solids	PE	250 mL	Store at 4°C	7 days
Hardness	PE	500 mL	Store at 4°C	180 days
Metals				6 months(4)
Mercury	Glass	500 mL	Store at 4°C	48 Hours
Dioxin	Amber glass	2 x 1 L	Store at 4°C	1 year
PCBs, OC Pesticides, OP Pesticides,Triazine Pesticides	Amber glass	4 x 1 L	Store at 4°C	7/40 days(3)
Suspended Solids Analysis for Organics and Metals	Amber glass	20 x 1 L	Store at 4°C	1 year(5)
Herbicides	Glass	2 x 40 mL	Thiosulfate and Store at 4°C	14 days
Semivolatile Organic Compounds	Glass	2 x 1 L	Store at 4°C	7 days
Volatile Organic Compounds	VOA	3 x 40 mL	HCl and Store at 4°C	14 days
Sediment				

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
% Solids	Glass	2 x 8 oz jar	Store at 4°C	7 days
Total Organic Carbon (TOC)				1 year(6)
OC Pesticides, PCBs, PAHs				1 year(5)
Metals				
Tissue				
% Lipids	teflon sheet	200 g	Store on dry ice	1 year(5)
Chlordane				
DDTs				
Dieldrin				

PE – Polyethylene

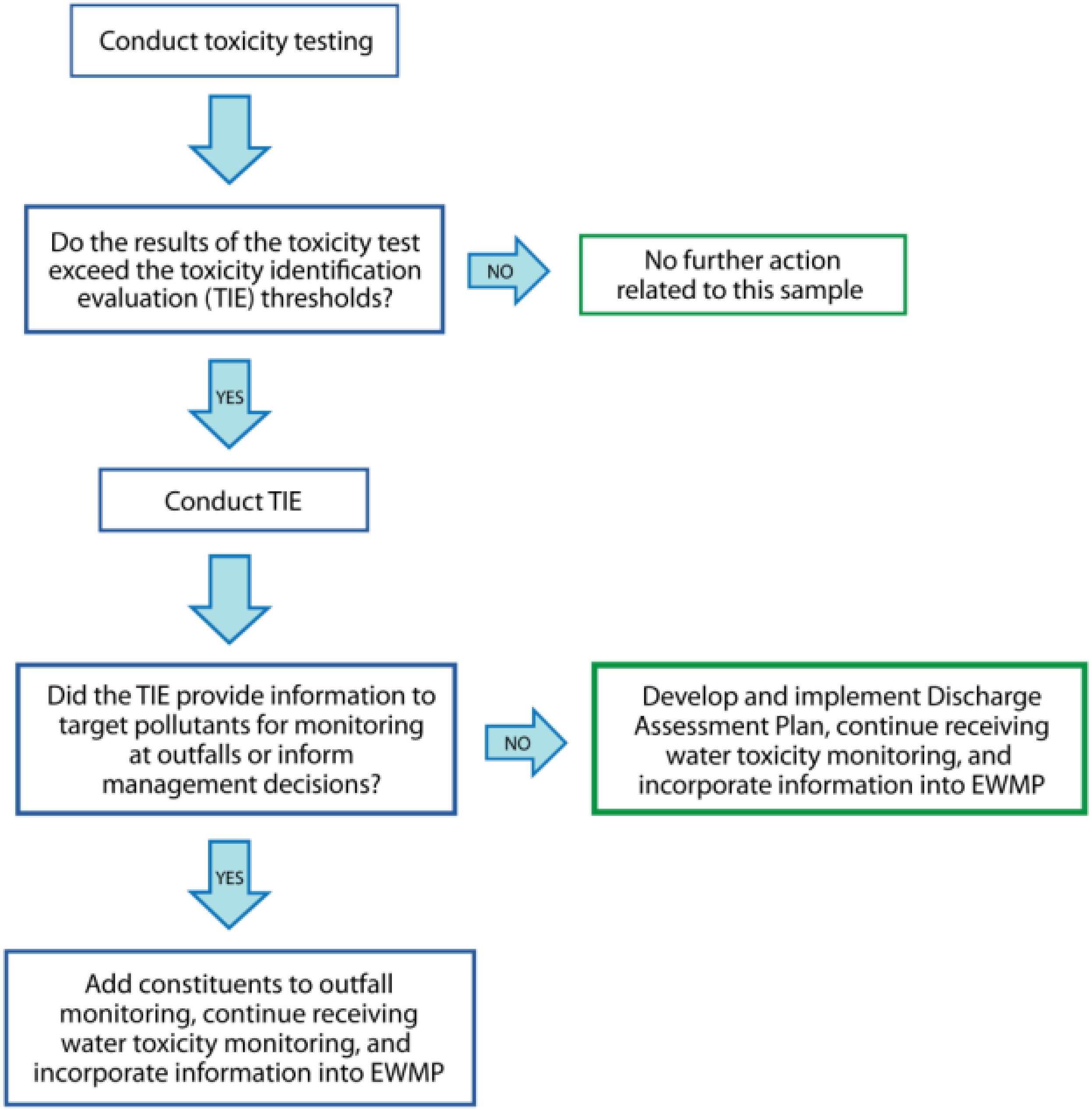
4. Additional volume may be required for QC analyses.
5. Tests should be initiated within 36 hours of collection. The 36-hour hold time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, samples may be split from toxicity samples in the laboratory and analyzed for specific chemical parameters. All other sampling requirements for these samples are as specified in this document for the specific analytical method. Results of these analyses are not for any other use (e.g., characterization of ambient conditions) because of potential holding time exceedances and variance from sampling requirements.
6. 7/40 = 7 days to extract and 40 days from extraction to analysis.
7. 6 months after preservation.
8. One year if frozen, otherwise 14 days to extract and 40 days from extraction to analysis.
9. One year if frozen, otherwise 28 days.

D-1.7 Aquatic Toxicity Testing and Toxicity Identification Evaluations

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. The following outlines the approach for conducting aquatic toxicity monitoring and evaluating results. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP.

The approach to conducting aquatic toxicity monitoring is presented in **Figure D-1**, which describes a general evaluation process for each sample collected as part of routine sampling conducted twice per year in wet weather and once per year in dry weather. Monitoring begins in the receiving water and the information gained is used to identify constituents for monitoring at outfalls to support the identification of pollutants that need to be addressed in the WMP. The sub-sections below describe the detailed process and its technical and logistical rationale.

Figure D-1.
Generalized Aquatic Toxicity Assessment Process



D-1.7.1 Sensitive Species Selection

The MRP (page E-32) states that a sensitivity screening to select the most sensitive test species should be conducted unless "a sensitive test species has already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s), then monitoring shall be conducted using only that test species." Previous relevant studies conducted

in the watershed should be considered. Such studies may have been completed via previous MS4 sampling, wastewater NPDES sampling, or special studies conducted within the watershed. The following discuss the species selection process for assessing aquatic toxicity in receiving waters.

As described in the MRP (page E-31), if samples are collected in receiving waters with salinity less than 1 part per thousand (ppt), or from outfalls discharging to receiving waters with salinity less than 1 ppt, toxicity tests should be conducted on the most sensitive test species in accordance with species and short-term test methods in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136). The freshwater test species identified in the MRP are:

- A static renewal toxicity test with the fathead minnow, Pimephales promelas (Larval Survival and Growth Test Method 1000.04).
- A static renewal toxicity test with the daphnid, Ceriodaphnia dubia (Survival and Reproduction Test Method 1002.05).
- A static renewal toxicity test with the green alga, Selenastrum capricornutum (also named Raphidocelis subcapitata) (Growth Test Method 1003.0).

The three test species were evaluated to determine if either a sensitive test species had already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s). In reviewing the available data in the watershed, metals, historical organics, and currently used pesticides have been identified as problematic and are generally considered the primary aquatic life toxicants of concern found in urban runoff. Given the knowledge of the presence of these potential toxicants in the watershed, the sensitivities of each of the three species were considered to evaluate which is the most sensitive to the potential toxicants in the watershed.

Ceriodaphnia dubia (C. dubia) has been reported as a sensitive test species for historical and current use pesticides and metals, and studies indicate that it is more sensitive to the toxicants of concern than Pimephales promelas (P. promelas) or Selenastrum capricornutum (S. capricornutum). In Aquatic Life Ambient Freshwater Quality Criteria - Copper, the USEPA reports greater sensitivity of C. dubia to copper (species mean acute value of 5.93 µg/l) compared to P. promelas (species mean acute value of 69.93 µg/l; EPA, 2007). C. dubia's relatively higher sensitivity to metals is common across multiple metals. Additionally, researchers at the University of California (UC), Davis reviewed available reported species sensitivity values in developing pesticide criteria for the Central Valley Regional Water Quality Control Board. The UC Davis researchers reported higher sensitivity of C. dubia to diazinon and bifenthrin (species mean acute value of 0.34 µg/l and 0.105 µg/l) compared to P. promelas (species mean acute value of 7804 µg/l and 0.405 µg/l; Palumbo et al., 2010a,b). Additionally, a study of the City of Stockton urban stormwater runoff found acute and chronic toxicity to C. dubia, with no toxicity to S. capricornutum or P. promelas (Lee and Lee, 2001). The toxicity was

attributed to organophosphate pesticides, indicating a higher sensitivity of C. dubia compared to S. capricornutum or P. promelas. C. dubia is also the test organism selected to assess the ambient toxicity of the Los Angeles River by the Los Angeles River Watershed Monitoring Program and has been the most-sensitive species to the Donald C. Tillman and the Los Angeles-Glendale Water Reclamation Plant effluent as well as the Los Angeles River receiving water in the vicinity of the water treatment plants. While P. promelas is generally less sensitive to metals and pesticides, this species can be more sensitive to ammonia than C. dubia. However, as ammonia is not typically a constituent of concern for urban runoff and ammonia is not consistently observed above the toxic thresholds in the watershed, P. promelas is not considered a particularly sensitive species for evaluating the impacts of urban runoff in receiving waters in the watershed.

S. capricornutum is a species sensitive to herbicides. However, while sometimes present in urban runoff, herbicides are not identified as a potential toxicant in the watershed. Additionally, S. capricornutum is not considered the most sensitive species as it is not sensitive to pyrethroids or organophosphate pesticides and is not as sensitive to metals as C. dubia. Additionally, the S. capricornutum growth test can be affected by high concentrations of suspended and dissolved solids, color, and pH extremes, which can interfere with the determination of sample toxicity. As a result, it is common to manipulate the sample by centrifugation and filtration to remove solids to conduct the test; however, this process may affect the toxicity of the sample. In a study of urban highway stormwater runoff (Kayhanian et. al, 2008), S. capricornutum response to the stormwater samples was more variable than the C. dubia and the P. promelas and in some cases the algal growth was possibly enhanced due to the presence of stimulatory nutrients. Also, in a study on the City of Stockton urban stormwater runoff (Lee and Lee, 2001) the S. capricornutum tests rarely detected toxicity where the C. dubia and the P. promelas regularly detected toxicity.

As C. dubia is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, C. dubia is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool. The ease of sample collection and higher sensitivity will support assessing the presence of ambient receiving water toxicity or long term effects of toxic stormwater over time. As such, toxicity testing in the freshwater portions of the watershed will be conducted using C. dubia. However, C. dubia test organisms are typically cultured in moderately hard waters (80-100 mg/L $CaCO_3$) and can have increased sensitivity to elevated water hardness greater than 400 mg/L $CaCO_3$), which is beyond their typical habitat range. Because of this, in instances where hardness in site waters exceeds 400 mg/L ($CaCO_3$), an alternative test species may be used. Daphnia magna is more tolerant to high hardness levels and is a suitable substitution for C. dubia in these instances (Cowgill and Milazzo, 1990).

D-1.7.2 Testing Period

The following describes the testing periods to assess toxicity in samples collected in the WMP area during dry and wet weather conditions. As wet weather conditions in the region generally persist for less than the acute and chronic testing periods (typically 48 hours and 7 days, respectively), the shorter of the two testing methods, in the case of *C. dubia* acute testing measuring survival, will be used for wet weather toxicity testing. Utilization of chronic tests on wet weather samples generates results that are not representative of the conditions found in the receiving water intended to be simulated by toxicity testing. Acute toxicity tests are utilized to be consistent with the relatively shorter exposure periods of species in the WMP area to potential toxicants introduced by urban runoff during storm events. Acute testing to assess survival endpoints will be conducted in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA, 2002b).

Chronic toxicity tests will be used to assess both survival and reproductive/growth endpoints for *C. dubia* in dry weather samples. Chronic testing will be conducted on undiluted samples in accordance with *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (USEPA, 2002a).

D-1.7.3 Toxicity Endpoint Assessment and Toxicity Identification Evaluation Triggers

Per the MRP, acute and chronic toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration (IWC) is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010). Follow-up triggers are generally based on the Permit specified statistical assessment as described below.

For acute *C. dubia* toxicity testing, if a statistically significant 50% difference in mortality is observed between the sample and laboratory control, a toxicity identification evaluation (TIE) will be performed. TIE procedures are discussed in detail in the following subsection. Experience conducting TIEs in receiving waters in the region supports using a 50% mortality trigger to provide a reasonable opportunity for a successful TIE. During TMDL monitoring in the Calleguas Creek Watershed (CCW) in 2003 and 2004, TIEs were initiated on samples exceeding the 50% threshold (the majority of which displayed 100% mortality). In that study, toxicity degraded in approximately 40% of the samples on which TIE procedures were conducted making the TIE unsuccessful (and effectively useless in pinpointing specific toxicants). The Regional Board approved monitoring program for the CCW Toxicity, Chlorpyrifos and Diazinon TMDL utilizes a 50% threshold for TIE initiation. Additionally, a 50% mortality threshold is utilized in the Ventura County MS4 Permit.

For chronic *C. dubia* toxicity testing, if a statistically significant 50% difference in mortality is observed between the sample and laboratory control, a TIE will be performed. If a statistically significant 50% difference in a sub-lethal endpoint is observed between the sample and laboratory control, a confirmatory sample will be collected from the receiving water within two weeks of obtaining the results of the initial sample. If a statistically significant 50% difference in mortality or sub-lethal endpoint is observed between the sample and laboratory control on the confirmatory sample, a TIE will be performed.

For the chronic marine and estuarine tests, the percent effect will be calculated. The percent effect is defined as the difference between the mean control response and the mean IWC response divided by the control response, multiplied by 100. A TIE will be performed if the percent effect value is equal to or greater than 50 percent.

TIE procedures will be initiated as soon as possible after the toxicity trigger threshold is observed to reduce the potential for loss of toxicity due to extended sample storage. If the cause of toxicity is readily apparent or is caused by pathogen related mortality (PRM) or epibiont interference with the test, the result will be rejected. If necessary, a modified testing procedure will be developed for future testing.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE positive control "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity

D-1.7.4 Toxicity Identification Evaluation Approach

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s).

The TIE approach is divided into three phases as described in USEPA's 1991 Methods for Aquatic Toxicity Identification Evaluations – Phase I Toxicity Characterization Procedures – Second Edition (EPA/600/6-9/003) and briefly summarized as follows:

- Phase I utilizes methods to characterize the physical/chemical nature of the constituents which cause toxicity. Such characteristics as solubility, volatility and filterability are determined without specifically identifying the toxicants. Phase I results are intended as a first step in specifically identifying the toxicants but the data generated can also be used to develop treatment methods to remove toxicity without specific identification of the toxicants.

- Phase II utilizes methods to specifically identify toxicants.
- Phase III utilizes methods to confirm the suspected toxicants.

A Phase I TIE will be conducted on samples that exceed a TIE trigger described above. Water quality data will be reviewed to future support evaluation of potential toxicants. TIEs will perform the manipulations described in **Table D-6**. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs (USEPA, 1991, 1992, 1993a-b).

Table D-6.
Aquatic Toxicity Identification Evaluation Sample Manipulations

TIE Sample Manipulation	Expected Response
pH Adjustment (pH 7 and 8.5)	Alters toxicity in pH sensitive compounds (i.e., ammonia and some trace metals)
Filtration or centrifugation	Removes particulates and associated toxicants
Ethylenedinrilo-Tetraacetic Acid (EDTA)	Chelates trace metals, particularly divalent cationic metals
Sodium thiosulfate (STS) addition	Reduces toxicants attributable to oxidants (i.e., chlorine) and some trace metals
Piperonyl Butoxide (PBO)	Reduces toxicity from organophosphate pesticides such as diazinon, chlorpyrifos and malathion, and enhances pyrethroid toxicity
Carboxylesterase addition(1)	Hydrolyzes pyrethroids
Solid Phase Extraction (SPE) with C18 column	Removes non-polar organics (including pesticides) and some relatively non-polar metal chelates
Sequential Solvent Extraction of C18 column	Further resolution of SPE-extracted compounds for chemical analyses
No Manipulation	Baseline test for comparing the relative effectiveness of other manipulations

10. Carboxylesterase addition has been used in recent studies to help identify pyrethroid-associated toxicity (Wheelock et al., 2004; Weston and Amweg, 2007). However, this treatment is experimental in nature and should be used along with other pyrethroid-targeted TIE treatments (e.g., PBO addition).

1. The ESGV Group will identify the cause(s) of toxicity using the treatments in **Table D-6** and, if possible, using the results of water column chemistry analyses. After any initial determinations of the cause of toxicity, the information may be used during future events to modify the targeted treatments to more closely target the expected toxicant or to provide additional treatments to narrow the toxicant cause(s). Moreover, if the toxicant or toxicant class is not initially identified, toxicity monitoring during subsequent events will confirm if the toxicant is persistent or a short-term episodic occurrence.

2. As the primary goals of conducting TIEs is to identify pollutants for incorporation into outfall monitoring, narrowing the list of toxicants following Phase I TIEs via Phase II or III TIEs is not necessary if the toxicant class determined during the Phase I TIE is sufficient for: (1) identifying additional pollutants for outfall monitoring; and/or (2) identifying control measures. Thus, if the specific pollutant(s) or the analytical class of pollutant (e.g., metals that are analyzed via USEPA Method 200.8) are identified then sufficient information is available to inform the addition of pollutants to outfall monitoring.
3. Phase II TIEs may be utilized to identify specific constituents causing toxicity in a given sample if information beyond what is gained via the Phase I TIE and review of chemistry data is needed to identify constituents to monitor or management actions. Phase III TIEs will be conducted following any Phase II TIEs.
4. For the purposes of determining whether a TIE is inconclusive, TIEs will be considered inconclusive if:
5. The toxicity is persistent (i.e., observed in the positive control), and
6. The cause of toxicity cannot be attributed to a class of constituents (e.g., insecticides, metals, etc.) that can be targeted for monitoring.
7. If (1) a combination of causes that act in a synergistic or additive manner are identified; (2) the toxicity can be removed with a treatment or via a combination of the TIE treatments; or (3) the analysis of water quality data collected during the same event identify the pollutant or analytical class of pollutants, the result of a TIE is considered conclusive.
8. Note that the MRP (page E-33) allows a TIE Prioritization Metric (as described in Appendix E of the Southern California Stormwater Monitoring Coalition's (SMC) Model Monitoring Program) for use in ranking sites for TIEs. However, as the extent to which TIEs will be conducted is unknown, prioritization cannot be conducted at this time. However, prioritization may be utilized in the future based on the results of toxicity monitoring and an approach to prioritization will be developed through the CIMP adaptive management process and will be described in future versions of the CIMP.

D-1.7.5 Discharge Assessment

The ESGV Group will prepare a Discharge Assessment Plan (DAP) if TIEs conducted on consecutive sampling events are inconclusive. Discharge assessments will be conducted after consecutive inconclusive TIEs, rather than after one, because of the inherit variability associated with the toxicity and TIE testing methods.

The DAP will consider the observed potential toxicants in the receiving water and associated urban runoff discharge above known species effect levels and the relevant exposure periods compared to the duration of the observed toxicity. The DAP will identify:

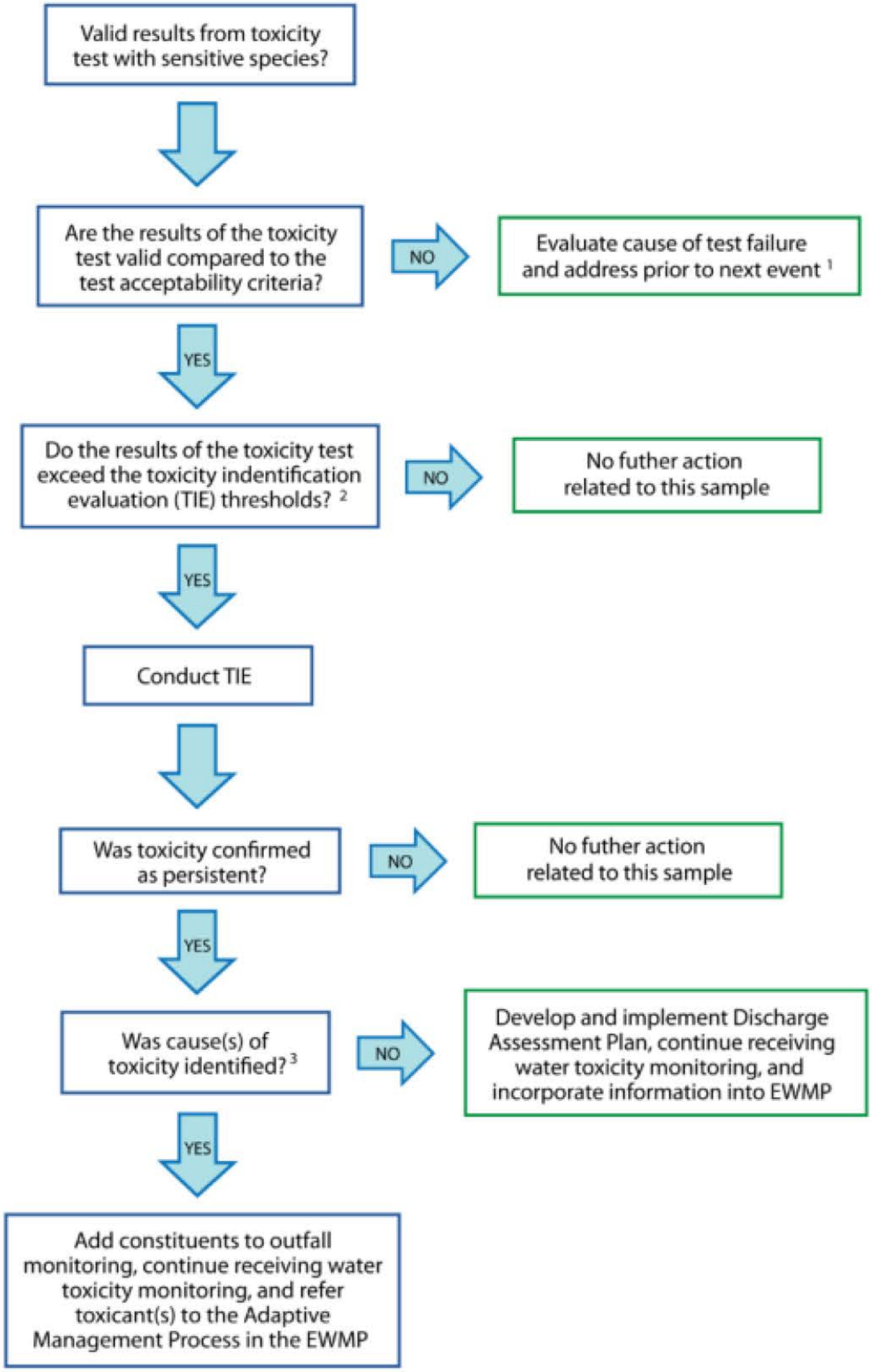
1. If desired, additional receiving water toxicity monitoring to be conducted to further evaluate the spatial extent of receiving water toxicity.
2. The test species to be utilized. If a species is proposed that is different than the species utilized when receiving water toxicity was observed, justification for the substitution will be provided.
3. The number and location of monitoring sites and their spatial relation to the observed receiving water toxicity.
4. The number of monitoring events that will be conducted, a schedule for conducting the monitoring, and a process for evaluating the completion of the assessment monitoring.

The DAP will be submitted to Regional Board staff for comment within 60 days of receipt of notification of the second consecutive inconclusive result. If no comments are received within 30 days, it will be assumed that the approach is appropriate for the given situation and the DAP will be implemented within 90-days of submittal. If comments are received within 30 days, the DAP will be resubmitted to Regional Board staff and the Plan will be implemented within 90-days of submittal of a version of the Plan that does not receive comments from Regional Board staff.

D-1.7.6 Summary of Aquatic Toxicity Monitoring

The approach to conducting aquatic toxicity monitoring as described in the previous sections of this Attachment is summarized in detail in **Figure D-2**. The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

Figure D-2.
Detailed Aquatic Toxicity Assessment Process



1. Test failure includes pathogen or epibont interference, which should be addressed prior to the next toxicity sampling event.
2. For freshwater, the TIE threshold is equal to or greater than 50% (≥50%) mortality in an acute (wet weather) or chronic (dry weather) test. If a ≥50% effect in a sub-lethal endpoint for chronic test is observed during dry weather, a follow up sample will be collected within two weeks of the completion of the initial sample collection. If the follow up sample exhibits a ≥50% effect, a TIE will be initiated.
3. The goal of conducting Phase I TIEs is to identify the cause of toxicity so that outfall monitoring can incorporate the toxicant(s) into the list of constituents monitored during outfall monitoring. Thus, if specific toxicant(s) or the analytical class of toxicants (i.e., metals that are analyzed via EPA Method 200.8) are identified, sufficient information is available to inform the addition of pollutants to the list of pollutants monitored during outfall monitoring.

D-1.8 Bio-Assessment/Macrobenthic Community Assessment

The LACFCD has indicated that it will continue its participation in the SMC Regional Bioassessment Monitoring Program on behalf of the ESGV Group. Thus no specific monitoring and analytical procedures are included in the CIMP at this time. If in the future, such monitoring is necessary under this program, the CIMP will be revised to include appropriate procedures.

D-1.8.1 List of Laboratories Conducting Analysis

The chosen laboratories will be able to meet the measurement quality objectives set forth in **Table D-2** through **Table D-4**. Laboratories will meet California Environmental Laboratory Accreditation Program (ELAP) and/or National Environmental Laboratory Accreditation Program (NELAP) certifications and any data quality requirements specified in this document. Due to contracting procedures and solicitation requirements, qualified laboratories have not yet been selected to carry out the analytical responsibilities described in this CIMP. Selected laboratories will be listed along with lab certification information in **Table D-7**. Following the completion of the first monitoring year, the CIMP will be updated to include the pertinent laboratory specific information. At the end of all future monitoring years the ESGV Group will assess the laboratories performance and at that time a new laboratory may be chosen.

Table D-7.
Summary of Laboratories Conducting Analysis for the ESVG CIMP

Laboratory(1)	General Category of Analysis	Lab Certification No. & Expiration Date(2)

1. Information for all laboratories will be added to this table following their selection and upon CIMP update.
2. Lab certifications are renewed on an annual basis.

In the event that the laboratories selected to perform analyses for the CIMP are unable to fulfill data quality requirements outlined herein (e.g., due to instrument malfunction), alternate laboratories need to meet the same requirements that the primary labs have met. The original laboratory selected may recommend a qualified laboratory to act as a substitute. However, the final decision regarding alternate laboratory selection rests with the ESGV Group.

D-2 SAMPLING METHOD AND SAMPLE HANDLING

The following sections describe the steps to be taken to properly prepare for and initiate water quality sampling for the CIMP.

D-2.1 Monitoring Event Preparation

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps will be completed two weeks prior to each sampling event (a condensed timeline may be appropriate in storm events, which may need to be completed on short notice):

1. Contact laboratories to order sample containers and to coordinate sample transportation details.
2. Confirm scheduled monitoring date with field crew(s), and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment.
4. Prepare sample container labels and apply to bottles.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations and samples to be collected at each of the monitoring sites.
6. Verify that field measurement equipment is operating properly (i.e., check batteries, calibrate, etc.)

Table D-8 provides a checklist of field equipment to prepare prior to each monitoring event.

Table D-8.
Field Equipment Checklist

☐	Monitoring Plan
☐	Sample Containers plus Extras with Extra Lids
☐	Pre-Printed, Waterproof Labels (extra blank sheets)
☐	Event Summary Sheets
☐	Field Log Sheets
☐	Chain of Custody Forms
☐	Bubble Wrap
☐	Coolers with Ice
☐	Tape Measure
☐	Paper Towels or "Rags in a Box"
☐	Safety Equipment
☐	First Aid Kit
☐	Cellular Telephone
☐	Gate Keys
☐	Hip Waders
☐	Plastic Trash Bags
☐	Sealable Plastic Bags
☐	Grab Pole
☐	Clean Secondary Container(s)
☐	Field Measurement Equipment
☐	New Powder-Free Nitrile Gloves
☐	Writing Utensils
☐	Stop Watch
☐	Camera
☐	Blank Water

D-2.1.1 Bottle Order/ Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including quality control samples, as well as extra containers in case the need arises for intermediate containers or a replacement. The containers must be the proper type and size and contain preservative as appropriate for the specified laboratory analytical methods. **Table D-5** presents the proper container type, volume, and immediate processing and storage needs. The field crew must inventory sample containers upon receipt from the laboratory to ensure that adequate containers have been provided to meet analytical requirements for each monitoring event. After

each event, any bottles used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

D-2.1.2 Container Labeling and Sample Identification Scheme

All samples will be identified with a unique identification code to ensure that results are properly reported and interpreted. Samples will be identified such that the site, sampling location, matrix, sampling equipment and sample type (i.e., environmental sample or QC sample) can be distinguished by a data reviewer or user. Sample identification codes will consist of a site identification code, a matrix code, and a unique sample identification code. The format for sample identification codes is ESGV- ###.# - AAAA - XXX, where:

- ESGV indicates that the sample was collected as part of the ESGV CIMP.
- ###- identifies the sequentially numbered monitoring event, and the # is an optional indicator for re-samples collected for the same event. Sample events are numbered from 001 to 999 and will not be repeated.
- AAAA indicates the unique site ID for each site.
- XXX identifies the sample number unique to a sample bottle collected for a single event. Sample bottles are numbered sequentially from 001 to 999 and will not be repeated within a single event.

Custom bottle labels should be produced using blank waterproof labels and labeling software. This approach will allow the site and analytical constituent information to be entered in advance and printed as needed prior to each monitoring event. Labels will be placed on the appropriate bottles in a dry environment; applying labels to wet sample bottles should be avoided. Labels should be placed on sides of bottles rather than on bottle caps. All sample containers will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample containers simplifies field activities, leaving only sample collection time and date and field crew initials to be filled out in the field. Labels should include the following information:

Program Name	Date	Analytical Requirements
Station ID	Collection Time	Preservative Requirements
Sample ID	Sampling Personnel	Analytical Laboratory

D-2.1.3 Field Meter Calibration

Calibration of field measurement equipment is performed as described in the owner's manuals for each individual instrument. Each individual field crew will be responsible for calibrating their field measurement equipment. Field monitoring equipment must meet the requirements outlined in **Table D-1**and be calibrated before field events based on manufacturer guidance, but at a

minimum prior to each event. **Table D-9** outlines the typical field instrument calibration procedures for each piece of equipment requiring calibration. Each calibration will be documented on each event's calibration log sheet (presented in Appendix 1)

If calibration results do not meet manufacturer specifications, the field crew should first try to recalibrate using fresh aliquots of calibration solution. If recalibration is unsuccessful, new calibration solution should be used and/or maintenance should be performed. Each attempt should be recorded on the equipment calibration log. If the calibration results cannot meet manufacturer's specifications, the field crew should use a spare field measuring device that can be successfully calibrated. If a spare field measuring device that can be successfully calibrated is unavailable, field crews shall note the use of unsuccessfully calibrated equipment on each appropriate field log sheet. Additionally, the ESGV Group should be notified.

Calibration should be verified using at least one calibration fluid within the expected range of field measurements, both immediately following calibration and at the end of each monitoring day. Individual parameters should be recalibrated if the field meters do not measure a calibration fluid within the range of accuracy presented in **Table D-1**. Calibration verification documentation will be retained in the event's calibration verification log (presented in Appendix 1).

Table D-9.
Calibration of Field Measurement Equipment

Equipment / Instrument	Calibration and Verification Description	Frequency of Calibration	Frequency of Calibration Verification	Responsible Party
pH Probe	Calibration for pH measurement is accomplished using standard buffer solutions. Analysis of a mid-range buffer will be performed to verify successful calibration.	Day prior to 1st day or 1st day of sampling event	After calibration and at the end of each sampling day	Individual Sampling Crews
Temperature	Temperature calibration is factory-set and requires no subsequent calibration.			
Dissolved Oxygen Probe	Calibration for dissolved oxygen measurements is accomplished using a water saturated air environment. Dissolved oxygen (DO) measurement of water-saturated air will be performed and compared to a standard table of DO concentrations in water as a function of temperature and barometric pressure to verify successful calibration.			
Conductivity	Conductivity calibration will follow manufacturer's specifications. A mid-range conductivity standard will be analyzed to verify successful calibration.			
Turbidity	Turbidity calibration will follow manufacturer's specifications. A mid-range turbidity standard will be analyzed to verify successful calibration.			

D-2.1.4 Weather Conditions

Monitoring will occur during dry and wet conditions. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow or as defined by effective TMDLs within the watershed. Wet weather conditions are defined in the MRP as when the receiving water body has flow that is at least 20 percent greater than its base flow or as defined by effective TMDLs within the watershed.

Note that if rainfall begins after dry weather monitoring has been initiated, then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples during dry weather are consistent with similar programs within the region. However, to sufficiently characterize the receiving water during wet weather, composite samples will generally be used for wet weather sampling events. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli and oil and grease), situations where it is unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (autosampler) may not be warranted.

The MRP includes specific criteria for the time of monitoring events. With the exception of bacteria and metals monitoring, most constituents will be monitored during two dry weather monitoring events. For dry weather toxicity monitoring, sampling must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry weather monitoring event will take place during January unless sampling during another month is deemed to be preferable.

The first significant rain event of the storm year (first flush) will be monitored. The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

For a storm to be tracked, the first flush event will have a predicted rainfall of at least 0.25 inches with at least a 70 percent probability of rainfall 24 hours prior to the forecasted time of initial rainfall. Subsequent storm events must meet the tracking requirements, flow objectives, as well as be separated by a minimum of three days of dry weather. Antecedent conditions will be based on the LA County Department of Public Works (LACDPW) rain gage listed in **Table D-10**. The rain gage has been used to define wet and dry weather during TMDL monitoring in the watershed since 2009. Data can be obtained at http://dpw.lacounty.gov/wrd/Precip/index.cfm by clicking the 'See Data' link in the "Near Real-Time Precipitation Map" section. The web page displays a map showing real-time rainfall totals (in inches) for different rain gages. Although the default precipitation period is 24 hours, the user can view rainfall totals over different durations. Data from the rain gages is updated every 10 minutes.

Table D-10.
Real-Time Rain Gage Used to Define Weather Conditions for CIMP Monitoring[1]

Rainfall Gage	Operator	Gage Type	Latitude	Longitude
University of Southern California (USC) (375)	Los Angeles County Department of Public Works	Manually Observed Non-Mechanical Rain Gage	34.0226	-118.2908

1. Information for the gage can be found at http://dpw.lacounty.gov/wrd/Precip/alertlist.cfm.

The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River for at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from the same storm event.

For the purpose of triggering wet weather sampling preparation, field staff can estimate that any rainfall prediction for downtown Los Angeles of 0.1-0.5 inches in a 6- to 12-hour period would be sufficient to mobilize for wet weather sampling, or by utilizing the analyses of the CMP staff. The sampling crew should prepare to depart at the forecasted time of initial rainfall. The first of the four manual composite samples should be targeted for collection within 2 hours of local rainfall.

Publicly available meteorological forecasting systems are suggested for identifying and anticipating storm event sampling for the Study. The sampling decision protocol begins when the sampling crew recognizes an approaching storm, through weekly monitoring of forecasts. The National Weather Service's weather forecast for downtown Los Angeles can be accessed on-line at:

http://www.wrh.noaa.gov/lox/ then click on "Los Angeles" on the area map

From the forecast page, the link to "Quantitative Precipitation Forecast" provides forecasted precipitation in inches for the next 24 hours, in 3-hour increments for the first 12 hours and in 6-hour increments for the last 12 hours.

D-2.1.5 Flow Gage Measurements

USGS flow gages along the San Gabriel River will be used to determine whether the receiving water flow has exceeded the 20 percent threshold. Flows above the 20 percent threshold will classify the receiving water body as being in "wet" conditions and flows that are less than the 20 percent threshold will be "dry" conditions. In addition to the USGS rain gages, field crews will monitor flow at each of the sampling sties. **Table D-11** presents the location of flow gages located on the San Gabriel River.

Table D-11.
SGR and Tributary Flow Gages

Water Body	Water Body Type	Gage Location	Gage ID
San Gabriel River	Main Stem	San Gabriel River Below Santa Fe Dam	SGRS

D-2.2 Sample Handling

Proper sampling handling ensures the samples will comply with the monitoring methods and analytical hold time and provides traceable documentation throughout the history of the sample.

D-2.2.1 Documentation Procedures

The ESGV Group is responsible for ensuring that each field sampling team adheres to proper custody and documentation procedures. Field log sheets documenting sample collection and other monitoring activities for each site will be bound in a separate master logbook for each event. Field personnel have the following responsibilities:

1. Keep an accurate written record of sample collection activities on the field log sheets.
2. Ensure that all field log sheet entries are legible and contain accurate and inclusive documentation of all field activities.
3. Note errors or changes using a single line to cross out the entry and date and initial the change.
4. Ensure that a label is affixed to each sample collected and that the labels uniquely identify samples with a sample ID, site ID, date and time of sample collection and the sampling crew initials.
5. Complete the chain of custody forms accurately and legibly.

D-2.2.2 Field Documentation/ Field Log

Field crews will keep a field log book for each sampling event that contains a calibration log sheet, a field log sheet for each site, and appropriate contact information. The following items should be recorded on the field log sheet for each sampling event:

- Monitoring station location (Station ID);
- Date and time(s) of sample collection;
- Name(s) of sampling personnel;
- Sample collection depth;
- Sample ID numbers and unique IDs for any replicate or blank samples;
- QC sample type (if appropriate);
- Requested analyses (specific parameters or method references);

- Sample type (e.g., grab or composite);
- The results of field measurements (e.g., flow, temperature, dissolved oxygen, pH, conductivity, turbidity) and the time that measurements were made;
- Qualitative descriptions of relevant water conditions (e.g., water color, flow level, clarity) or weather (e.g., wind, rain) at the time of sample collection;
- Trash observations (presence/absence);
- Observations of recreational activities;
- A description of any unusual occurrences associated with the sampling event, particularly those that may affect sample or data quality.

The field log will be scanned into a PDF within one week of the conclusion of each sampling event. Alternatively, all measurements could be collected on an electronic device such as laptop or tablet computer. Attachment 1 contains an example of the field log sheet

D-2.2.3 Sample Handling and Shipment

The field crews will have custody of samples during each monitoring event. Chain-of-custody (COC) forms will accompany all samples during shipment to contract laboratories to identify the shipment contents. All water quality samples will be transported to the analytical laboratory by the field crew or by courier. The original COC form will accompany the shipment, and a signed copy of the COC form will be sent, typically via fax, by the laboratory to the field crew to be retained in the project file.

While in the field, samples will be stored on ice in an insulated container. Samples that must be shipped to the laboratory must be examined to ensure that container lids are tight and placed on ice to maintain the appropriate temperature. The ice packed with samples must be approximately 2 inches deep at the top and bottom of the cooler, and must contact each sample to maintain temperature. The original COC form(s) will be double-bagged in re-sealable plastic bags and either taped to the outside of the cooler or to the inside lid. Samples must be shipped to the contract laboratory according to transportation standards. The method(s) of shipment, courier name, and other pertinent information should be entered in the “Received By” or “Remarks” section of the COC form.

Coolers must be sealed with packing tape before shipping, unless transported by field or lab personnel, and must not leak. It is assumed that samples in tape-sealed ice chests are secure whether being transported by common carrier or by commercial package delivery. The laboratory’s sample receiving department will examine the shipment of samples for correct documentation, proper preservation and compliance with holding times. The following procedures are used to prevent bottle breakage and cross-contamination:

- Bubble wrap or foam pouches are used to keep glass bottles from contacting one another to prevent breakage, re-sealable bags will be used if available.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.

- If arrangements are not made in advance, the laboratory's sample receiving personnel must be notified prior to sample shipment.

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility of the personnel of each analytical laboratory to ensure that all applicable regulations are followed in the disposal of samples or related chemicals. Samples will be stored and transported as noted in **Table D-5**. Samples not analyzed locally will be sent on the same day that the sample collection process is completed, if possible. Samples will be delivered to the appropriate laboratory as will be indicated in **Table D-12**. Note that due to procurement procedures, the analytical laboratories have not been identified at this time. Information for all laboratories will be added to this table following their selection and upon CIMP update. Appropriate contacts will be listed along with lab certification information in **Table D-12**.

Table D-12.
Information on Laboratories Conducting Analysis for the ESGV CIMP

Laboratory[1]	General Category of Analysis	Shipping Method	Contact	Phone	Address	Lab Certification No. & Expiration Date[2]

1 Information for all laboratories will be added to this table following their selection and upon CIMP update.
2 Lab certifications are renewed on an annual basis.

D-2.2.4 Chain-of Custody Forms

Sample custody procedures provide a mechanism for documenting information related to sample collection and handling. Sample custody must be traceable from the time of sample collection until results are reported. A sample is considered under custody if:

- It is in actual possession
- It is in view after in physical possession
- It is placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession)

A COC form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation will be cross-checked to verify sample identification, type of analyses, number of containers, sample volume, preservatives, and type of containers. A complete COC form is to accompany the transfer of samples to the analyzing laboratory. A typical COC form is presented in Attachment 1.

D-2.2.5 Laboratory Custody Procedures

Laboratories will follow sample custody procedures as outlined in the laboratory's QA Manual. A copy of each contract laboratory's QA Manual should be available at the laboratory upon request. Laboratories shall maintain custody logs sufficient to track each sample submitted and to analyze or preserve each sample within specified holding times. The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedures;
- Verify sample preservation (e.g., temperature);
- Notify the ESGV Group if any problems or discrepancies are identified; and,
- Perform proper sample storage protocols, including daily refrigerator temperature monitoring and sample security.

Laboratories shall maintain records to document that the above procedures are followed. Once samples have been analyzed, samples will be stored at the laboratory for at least 30 days. After this period, samples may be disposed of properly.

D-2.3 Field Protocols

Briefly, the key aspects of quality control associated with field protocols for sample collection for eventual chemical and toxicological analyses are as follows:

1. Field personnel will be thoroughly trained in the proper use of sample collection gear and will be able to distinguish acceptable versus unacceptable water samples in accordance with pre-established criteria
2. Field personnel will be thoroughly trained to recognize and avoid potential sources of sample contamination (e.g., engine exhaust, ice used for cooling)
3. Sampling gear and utensils which come in direct contact with the sample will be made of non-contaminating materials (e.g., borosilicate glass, high-quality stainless steel and/or Teflon™, according to protocol) and will be thoroughly cleaned between sampling stations according to appropriate cleaning protocol (rinsing thoroughly at minimum)
4. Sample containers will be of the recommended type and will be free of contaminants (i.e., pre-cleaned)
5. Conditions for sample collection, preservation, and holding times will be followed

Field crews will be comprised of two persons per crew, minimum. For safety reasons, sampling will occur during daylight hours, when possible. Sampling on weekends and holidays will also be avoided. Other constraints on sampling events include, but are not limited to, lab closures and toxicity testing organism availability. Sampling events should proceed in the following manner:

1. Before leaving the sampling crew base of operations, confirm number and type of sample containers as well as the complete equipment list
2. Proceed to the first sampling site

3. Fill-out the general information on the field log sheet
4. Collect the environmental and quality assurance/quality control (QA/QC) samples indicated on the event summary sheet and store samples appropriately. Using the field log sheet, confirm that all appropriate containers were filled
5. Collect field measurements and observations, and record these on the field log sheet
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining sampling sites
7. Complete the COC forms using the information on the field log sheets
8. After sample collection is completed, deliver and/or ship samples to appropriate laboratory

D-2.4 Sample collection

All samples will be collected in a manner appropriate for the specific analytical methods to be used. The proper sampling techniques, outlined in this section, will ensure that the collected samples are representative of the water bodies sampled. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

D-2.4.1 Overview of Sampling Techniques

As described below, the method used to collect water samples is dependent on the depth, flow, and sampling location (receiving water, outfall). Nonetheless, in all cases:

1. Throughout each sample collection event, the sampler should exercise aseptic techniques to avoid any contamination (i.e., do not touch the inner surfaces or lip edges of the sample bottle or cap).
2. The sampler should use clean, powder-free, nitrile gloves for each site to prevent contamination
3. When collecting the sample, the sampler should not breathe, sneeze, or cough in the direction of the container
4. Gloves should be changed if they are soiled, or if the potential for cross-contamination exists from handling sampling materials or samples
5. While the sample is collected, the bottle lid shall not be placed on the ground
6. The sampler should not eat or drink during sample collection
7. The sampler should not smoke during sample collection
8. Each person on the field crew should wear clean clothing that is free of dirt, grease, or other substances that could contaminate the sampling apparatus or sample bottles
9. Sampling should not occur near a running vehicle. Vehicles should not be parked within the immediate sample collection area, even non-running vehicles
10. When the sample is collected, ample air space should be left in the bottle to facilitate mixing by shaking for lab analysis, unless otherwise required by the method
11. After the sample is collected and the cap is tightly screwed back on the bottle, the time of sampling should be recorded on the field log sheet
12. Any QA/QC samples that are collected should be also be noted on the field log sheet and labeled according the convention described in **Section D-1**
13. Samples should be stored as previously described
14. COC forms should be filled out as described in **Section D-2.2.4** of this Attachment and delivered to the appropriate laboratory as soon as feasible to ensure hold times are met

To prevent contamination of samples, clean metal sampling techniques using USEPA protocols outlined in USEPA Method 1669[1] will be used throughout all phases of the water sample collection. The protocol for clean metal sampling, based on USEPA Method 1669, is summarized below:

1. Samples are collected in rigorously pre-cleaned sample bottles with any tubing specially processed to clean sampling standards
2. At least two persons, wearing clean, powder-free nitrile or latex gloves at all times, are required on a sampling crew
3. One person, referred to as “dirty hands”, opens only the outer bag of all double-bagged sample bottles
4. The other person, referred to as “clean hands”, reaches into the outer bag, opens the inner bag and removes the clean sample bottle
5. Clean hands rinses the bottle at least two times by submerging the bottle, removing the bottle lid, filling the bottle approximately one-third full, replacing the bottle lid, gently shaking and then emptying the bottle. Clean hands then collects the sample by submerging the bottle, removing the lid, filling the bottle and replacing the bottle cap while the bottle is still submerged
6. After the sample is collected, the sample bottle is double-bagged in the opposite order from which it was removed from the same double-bagging
7. Clean, powder-free gloves are changed whenever something not known to be clean has been touched

D-2.4.2 Field Measurements and Observations

Field measurements will be collected and observations made at each sampling site after a sample is collected. Field measurements will include the parameters identified in the CIMP for which a laboratory analysis is not being conducted. Field monitoring equipment must meet the requirements outlined in **Table D-4**. Field measurements for sediment samples shall be collected from within one meter of the sediment. All field measurement results and field observations will be recorded on a field log sheet similar to the one presented in Appendix 1 and as described in **Section D-2.2.4** of this Attachment.

Measurements (except for flow) will be collected at approximately mid-stream, mid-depth at the location of greatest flow (if feasible) with a Hydrolab DS4 multi-probe meter, or comparable instrument(s). If at any time the collection of field measurements by wading appears to be unsafe, field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge, or by using a telescoping pole and intermediate container to obtain a sample for field

1 USEPA. April 1995. *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels.* EPA 821-R-95-034.

measurements and for filling sample containers. For situations where flows are not sufficiently deep to submerge the probes, an intermediate container will be utilized. The location of field measurements will be documented on the field log sheet.

Flow measurements will be collected as outlined in the following subsections at freshwater receiving water and non-stormwater outfall monitoring sites. Regardless of measurement technique used, if a staff gage is present the gage height will be noted. Field crews may not be able to measure flow at several sites during wet weather because of inaccessibility of the site. If this is the case, site inaccessibility will be documented on the field log sheet.

The field sampling crew has the primary responsibility for responding to failures in the sampling or measurement systems. Deviations from established monitoring protocols will be documented in the comment section of the field log sheet and noted in the post event summaries. If monitoring equipment fails, monitoring personnel will report the problem in the notes section of the field log sheet and will not record data values for the variables in question. Broken equipment will be replaced or repaired prior to the next field use. Data collected using faulty equipment will not be used.

A-1.1.1.1 *Shallow Sheet Flow Measurements*

If the depth of flow does not allow for the measurement of flow with a velocity meter (<0.1-foot) a "float" will be used to measure the velocity of the flowing water. The width, depth, velocity, cross section, and corresponding flow rate will be estimated as follows:

- **Sheet flow width:** The width (W) of the flowing water (not the entire part of the channel that is damp) is measured at the "top", "middle", and "bottom" of a marked-off distance – generally 10 feet (e.g., for a 10-foot marked-off section, W_{Top} is measured at 0-feet, W_{Mid} is measured at 5 feet, and W_{Bottom} is measured at 10 feet).

- **Sheet flow depth:** The depth of the sheet flow is measured at the top, middle, and bottom of the marked-off distance. Specifically, the depth (D) of the sheet flow is measured at 25%, 50%, and 75% of the flowing width (e.g., $D_{50\%}^{Mid}$ is the depth of the water at middle of the section in the middle of the sheet flow) at each of the width measurement locations. It is assumed that the depth at the edge of the sheet flow (i.e., at 0% and 100% of the flowing width) is zero.

- **Representative cross-section:** Based on the collected depth and width measurements, the representative cross-sectional area across the marked-off sheet flow is approximated as follows:

$$\mathrm{Re}\textit{presentative Cross Section} =$$

$$Average\ \{[\frac{W_{Top}}{4}\times(\frac{D_{25\%}^{Top}}{2}+\frac{\left(D_{50\%}^{Top}+D_{25\%}^{Top}\right)}{2}+\frac{\left(D_{75\%}^{Top}+D_{50\%}^{Top}\right)}{2}+\frac{D_{75\%}^{Top}}{2})],$$
$$[\frac{W_{Mid}}{4}\times(\frac{D_{25\%}^{Mid}}{2}+\frac{\left(D_{50\%}^{Mid}+D_{25\%}^{Mid}\right)}{2}+\frac{\left(D_{75\%}^{Mid}+D_{50\%}^{Mid}\right)}{2}+\frac{D_{75\%}^{Mid}}{2})],$$
$$[\frac{W_{Bottom}}{4}\times(\frac{D_{25\%}^{Bottom}}{2}+\frac{\left(D_{50\%}^{Bottom}+D_{25\%}^{Bottom}\right)}{2}+\frac{\left(D_{75\%}^{Bottom}+D_{50\%}^{Bottom}\right)}{2}+\frac{D_{75\%}^{Bottom}}{2})]\}$$

- **Sheet flow velocity:** Velocity is calculated based on the amount of time it took a float to travel the marked-off distance (typically 10-feet or more). Floats are normally pieces of leaves, litter, or floatables (suds, etc.). The time it takes the float to travel the marked-off distance is measured at least three times. Then average velocity is calculated as follows:

$$\textit{Average Surface Velocity} = \frac{\textit{Distance Marked off for Float Measurement}}{\textit{Average Time for Float to Travel Marked off Distance}}$$

- **Flow Rate calculation:** For sheet flows, based on the above measurements/estimates, the estimated flow rate, Q, is calculated by:

$$Q = f \text{ x } (\textit{Representative Cross Section}) \text{ x } (\textit{Average Surface Velocity})$$

The coefficient f is used to account for friction effects of the channel bottom. That is, the float travels on the water surface, which is the most rapidly-traveling portion of the water column. The average velocity, not the surface velocity, determines the flow rate, and thus f is used to “convert” surface velocity to average velocity. In general, the value of f typically ranges from 0.60 – 0.90 (USGS 1982). Based on flow rate measurements taken during the LA River Bacteria Source Identification Study (CREST 2008) a value of 0.75 will be used for f.

A-1.1.1.2 ***Free-flowing Outfalls***

Some storm drain outfalls are free-flowing, meaning the runoff falls from an elevated outfall into the channel, which allows for collection of the entire flowing stream of water into a container of known volume (e.g., graduated bucket or graduated Ziploc bag). The time it takes to fill the known volume is measured using a stopwatch, and recorded on the field log. The time it takes to fill the container will be measured three times and averaged to ensure that the calculated discharge is representative. In some cases, a small portion of the runoff may flow around or under the container. For each measurement, "percent capture", or the proportion of flow estimated to enter the bucket, will be recorded. For free-flowing outfalls, the estimated flow rate, Q, is calculated by:

$$Q = Average\left[\frac{Filled\ container\ Volume}{(Time\ to\ Fill\ Container)\times(Estimated\ Capture)}\right]$$

Based on measurements of free-flowing outfalls during the LA River Bacteria Source Identification Study (CREST, 2008), estimated capture typically ranges from 0.75 – 1.0.

A-1.1.1.3 *Sampling Techniques for the Collection of Water*

The following subsections provide details on the various techniques that can be utilized to collect water quality samples. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

A-1.1.1.4 *Direct Submersion: Hand Technique*

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid. In the case of mercury samples, remove the lid underwater to reduce the potential for contamination from the air.
3. Place the sample on ice.
4. Collect the remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.5 *Intermediate Container Technique*

Samples may be collected with the use of a clean intermediate container, if necessary, following the steps listed below. An intermediate container may include a container that is similar in composition to the sample container, a pre-cleaned pitcher made of the same material as the sample container, or a Ziploc bag. An intermediate container should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill, and quickly transfer the sample into the individual sample container(s) and secure the lid(s).
3. Place the sample(s) on ice.
4. Collect remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

Some flows may be too shallow to fill a container without using an intermediate container. When collecting samples from shallow sheet flows it is very important to not scoop up algae, sediment, or other particulate matter on the bottom because such debris is not representative of flowing water. To prevent scooping up such debris either: (1) find a spot where the bottom is relatively clean and allow the sterile intermediate container to fill without scooping; or (2) lay a clean sterile Ziploc® bag on the bottom and collect the water sample from on top of the bag. A fresh Ziploc® bag must be used at each site.

A-1.1.1.6 ***Pumping***

Samples may be collected with the use of a peristaltic pump and specially cleaned tubing following the steps listed below. Sample tubing should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Attach pre-cleaned tubing into the pump, exercising caution to avoid allowing tubing ends to touch any surface known not to be clean. A separate length of clean tubing must be used at each sample location for which the pump is used.
3. Place one end of the tubing below the surface of the water. To the extent possible, avoid placing the tubing near the bottom so that settled solids are not pumped into the sample container.
4. Hold the other end of the tubing over the opening of the sample container, exercising care not to touch the tubing to the sample container.
5. Pump the necessary sample volume into the sample container and secure the lid.
6. Place the sample on ice.
7. Collect remaining samples including quality control samples, if required, using the same protocols described above.
8. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.7 ***Autosamplers***

Autosamplers are used to characterize the entire flow of a storm in one analysis. They can be programmed to take aliquots at either time- or flow-based specified intervals. Before beginning setup in the field, it is recommended to read the manufacturer's instructions. The general steps to set up the autosampler are described below:

1. Connect power source to autosampler computer. This can be in the form of a battery or a power cable.
2. Install pre-cleaned tubing into the pump. Clean tubing will be used at each site and for each event, in order to minimize contamination.
3. Attach strainer to intake end of the tubing and install in sampling channel.
4. If running flow based composite samples; install flow sensor in sampling channel and connect it to the automatic compositor.
5. Label and install composite bottle(s). If sampler is not refrigerated, then add enough ice to the composite bottle chamber to keep sample cold for the duration of sampling or until such time as ice can be refreshed. Make sure not to contaminate the inside of the composite bottle with any of the ice.
6. Program the autosampler as per the manufacturer's instructions and make sure the autosampler is powered and running before leaving the site.

After the sample collection is completed the following steps must be taken to ensure proper sample handling:

1. Upon returning to the site, check the status of the autosampler and record any errors or missed samples. Note on the field log the time of the last sample, as this will be used for filling out the COCs.
2. Remove the composite bottle and store on ice. If dissolved metals are required, then begin the sample filtration process outlined in the following subsection, within 15 minutes of the last composite sample, unless compositing must occur at another location, in which case the filtration process should occur as soon as possible upon sample compositing.
3. Power down autosampler and leave sampling site.
4. The composite sample will need to be split into the separate analysis bottles either before being shipped to the laboratory or at the laboratory. This is best done in a clean and weatherproof environment, using clean sampling technique.

A-1.1.1.8 ***Dissolved Metals Field Filtration***

When feasible, samples for dissolved metals will be filtered in the field. The following describes an appropriate dissolved field filtration method. An alternative an equivalent method may be utilized, if necessary. A 50mL plastic syringe with a 0.45µm filter attached will be used to collect and filter the dissolved metals sample in the field. The apparatus will either come certified pre-cleaned from the manufacturer and confirmed by the analytical laboratory or be pre-cleaned by and confirmed by the analytical laboratory at least once per year. The apparatus will be double bagged in Ziploc plastic bags.

To collect the sample for dissolved metals, first collect the total metals sample using clean sampling techniques. The dissolved sample will be taken from this container. Immediately prior to collecting the dissolved sample, shake the total metals sample. To collect the dissolved metals sample using clean sampling techniques, remove the syringe from the bag and place the tip of the syringe into the bottle containing the total metals sample and draw up 50 mL of sample into the syringe. Next, remove the filter from the zip-lock bag and screw it tightly into the tip of the syringe. Then put the tip of the syringe with the filter into the clean dissolved metals container and push the sample through the filter taking care not to touch the inside surface of the sample container with the apparatus. The sample volume needs to be a minimum of 20 mL. If the filter becomes clogged prior to generating 20 mL of sample, remove and dispose of the used filter and replace it with a new clean filter (using the clean sampling techniques). Continue to filter the sample. When 20 mL has been collected, cap the sample bottle tightly and store on ice for delivery to the laboratory.

D-2.4.3 Receiving Water Sample Collection

A grab sample is a discrete individual sample. A composite sample is a mixture of samples collected over a period of time either as time or flow weighted. A time-weighted composite is created by mixing multiple aliquots collected at specified time intervals. A flow-weighted composite is created by mixing multiple aliquots collected at equal time intervals but where the volume of the aliquot is based on flow rate. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Should field crews feel that it is unsafe to collect samples for any reason, the field crews **SHOULD NOT COLLECT** a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

Grab samples will be used for dry weather sampling events, because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples will be collected as described in **Section D-2.4.1** of this Attachment. Monitoring site configuration and consideration of safety will dictate grab sample collection technique. The potential exists for monitoring sites to lack discernable flow. Except in the case of lakes, the lack of discernable flow may generate unrepresentative data. To address the potential confounding interference that can occur under such conditions, sites sampled should be assessed for the following conditions and sampled or not sampled accordingly:

- Pools of water with no flow or no visible connection to another surface water body should not be sampled. The field log should be completed for non-water quality data (including date and time of visit) and the site condition should be photo-documented.
- Flowing water (i.e., based on visual observations, flow measurements, and a photo-documented assessment of conditions immediately upstream and downstream of the sampling site) site should be sampled.

Wet weather samples will generally be collected as either time- or flow-weighted composites. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, situations where it is unsafe to collect composite samples or to perform investigative monitoring where composite sampling or installation of an autosampler may not be warranted.

It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.4 Stormwater Outfall Sample Collection

Stormwater outfalls will be monitored with similar methods as discussed in **Section D-2.4.3** of this Attachment. Sampling will not be undertaken if the outfalls are not flowing or if conditions exist where the receiving water is back-flowing into the outfall. It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.5 Non-Stormwater Outfall Screening Surveys and Sample Collection

The outfall screening process is designed to identify outfalls that have significant non-stormwater (non-stormwater) discharges. The collection of water quality data will support the determination of significant non-stormwater discharges as well as to characterize dry weather loading.

A-1.1.1.9 *Preparation for Outfall Surveys*

Preparation for outfall surveys includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps should be completed two weeks prior to each outfall survey:

1. Check weather reports and LACDPW rain gage to ensure that antecedent dry weather conditions are suitable.
2. Contact appropriate Flood Maintenance Division personnel from LACDPW to notify them of dates and times of any activities in flood control channels.
3. Contact laboratories to order bottles and to coordinate sample pick-ups.
4. Confirm scheduled sampling date with field crews.
5. Set-up sampling day itinerary including sample drop-offs and pick-ups.
6. Compile field equipment.
7. Prepare sample labels.
8. Prepare event summaries to indicate the type of field measurements, field observations, and samples to be taken at each of the outfalls.
9. Prepare COCs.

10. Charge the batteries of field tablets (if used).

A-1.1.1.10 *Non-Stormwater Sample Collection*

Water quality samples will be collected consistent with the dry weather requirements outlined in the receiving water monitoring section using the direct submersion, intermediate container, shallow sheet flow, or pumping methods described in **Section A-1.1.1.3** of this Attachment.

D-2.4.6 Stormborne Sediment Sampling

The Puddingstone Reservoir TMDLs and the Harbors Toxics TMDLs include requirements for the analysis of water quality samples to assess the contribution of certain organic pollutants associated with bulk sediment (**Table D-13**).

Table D-13.
Categories of Constituents for Assessing Sediment Concentrations in Water for the Puddingstone Reservoir and the Harbors Toxics TMDLs

General Category of Constituent	Harbors Toxics TMDLs	Puddingstone Reservoir TMDLs
Metals(1)	X	
DDTs(2)	X	X
Chlordanes(2)		X
Dieldrin		X
PCBs(2)	X	X
PAHs(2)	X	

1 Metals include copper, lead, silver, and zinc.
2 See **Table D-3** for a list of individual constituents in each category.

Most of the organochlorine (OC) pesticides and PCBs and many of the PAHs tend to strongly associate with sediment and organic material. These constituents commonly have octanol/water partition coefficients (log Kow) that are greater than six, elevated soil/water partition coefficients (log Kd) and elevated soil adsorption coefficients (log Koc). The lighter weight PAHs such as naphthalene, acenaphthene and acenaphthylene tend to be more soluble in water and volatile. Concentrations of OC pesticides, PCBs, and PAHs are often below or are very close to the limits of detection for conventional analytical methods used for analyzing water samples. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors.

Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Use of conventional analytical methods for analysis of the filtered sediment is then expected to require at least 5 grams of sediment (typically 10 grams is preferred by laboratories) for each of the groups of analytes (metals, OC pesticides, PCBs and PAHs) in order to achieve detection limits necessary to quantify loads. In addition, the direct impacts of filtering samples with high sediment content are not well understood. Efforts by the City of Los Angeles and Los Angeles County in the Ballona Creek and Marina del Rey watersheds, respectively, have demonstrated the challenges associated with collecting and analyzing suspended sediments. Assuming samples contain sediment at an average TSS concentration of 100 mg/L and that all sediment could be recovered, analyses might require as much as 50 liters for each test method (total of 200 liters). An ongoing special study is underway in Marina del Rey to evaluate various methods for capturing sufficient sediment to conduct analysis. In Ballona Creek, the City of Los Angeles has been successful in collecting sufficient volumes of sediment over the course of a year to conduct the analysis. This allows for the quantification of annual loading; however, it does not allow for an evaluation of concentrations and loads under various storm conditions. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted. In Ballona Creek, duplicate and quality control analysis have been limited to the available sediment, resulting in situations where either certain target constituents or quality control analysis are not completed.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668) and PAHs (CARB). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Conventional methods for analyzing for metals of interest are sufficiently sensitive to assess concentrations on suspended sediments. During the first three years, analyses will be conducted on whole water samples. These test methods provide detection limits that are roughly 100 times more sensitive than conventional analytical methods. In addition, these extremely low detection limits can be achieved with as little as 3-6 liters of stormwater.

Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in Los Angeles County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events. The approach contained herein provides the opportunity to quantify concentrations, and therefore loads, for each stormwater sampling event.

For purposes of load calculations, it would be assumed that 100% of OC pesticides, PCBs and PAHs were associated with suspended solids. Separate analyses of TSS/SSC would be used to normalize the data. After three years (approximately four to six storm events) the data will be reevaluated to assess whether continued use of the HRMS approach remains to be beneficial. If deemed necessary, a modified approach will be evaluated for analysis of filtered suspended sediments.

A-1.1.1.11 ***Sampling and Analytical Procedures***

Stormwater samples for the Harbors Toxics TMDLs will be collected using autosamplers as described in **Section A-1.1.1.7**. Based on TSS measurements at one mass emission sites in LA County (**Table D-14**), use of a TSS concentration of 100 mg/L is expected to provide a conservative basis for estimating reporting limits for OC pesticides, PCBs, and PAHs in suspended sediments based upon 1-liter samples. However, two liters of storm water will be provided for each organic analytical suite for a total of six liters. An accurate measure of suspended sediments is critical to this sampling approach. TSS will be analyzed; however, SSC will be used as the standard for calculating the concentrations of target constituents in suspended sediments and total loads.

Since detection limits will depend upon the concentration of suspended sediment in the sample, the laboratory analyzing the suspended sediment concentrations will be asked to provide a rush analysis to provide information that can be used to direct processing of the samples for the organic compounds. If TSS/SSC are less than 150 mg/L, two liters will be extracted for subsequent HRMS analysis. If TSS concentrations are between 150 and 200 mg/L, one of the additional liter samples may be used to increase the volume of sample water for just PAHs or the additional liter may be used as a field duplicate for each analysis. If TSS concentrations are greater than 200 mg/L, the additional liter may be used as a field duplicate for each analysis. If the initial TSS sample indicates that sediment content is less than 50 mg/L, additional measures will be taken to improve PAH reporting limits with respect to suspended sediment loads. A field duplicate from one site will be analyzed if adequate sample volumes are obtained.

Target reporting limits (**Table D-15** and **Table D-16**) were established based upon bed sediment reporting limits listed in the Coordinated Compliance and Reporting Plan for the Greater Los Angeles and Long Beach Harbor Waters (Anchor QEA, 2013). **Table D-15** and **Table D-16** provide a summary of the detection limits attainable in water samples using HRMS analytical methods. Estimated detection limits are provided for concentrations of the target constituents in suspended sediments given the assumption that suspended sediment content of the water sample is 100 mg/L and that 100 percent of the target constituents are associated with the suspended sediment. This provides a conservative assumption with respect to evaluating the potential impacts of concentrations of OC pesticides, PCBs, and PAHs in suspended sediment on concentrations in bed sediment. Additionally, **Table D-15** and **Table D-16** present relevant TMDL targets and reporting limits suggested in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009). The following summarizes a comparison between the estimated detection limits for OC pesticides, PCBs, and PAHs in the suspended sediments to target reporting limits:

- For OC pesticides (**Table D-15**), estimated detection limits in the suspended sediment are at or below TMDL targets limits for bed sediments, except for dieldrin. The dieldrin estimated detection limit is above the lowest TMDL target, but not the remaining TMDL targets, and is below observed concentrations reported in the TMDL staff reports. Additionally, estimated detection limits in the suspended sediment are below target bed sediment reporting limits for this CIMP and target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009), except for dieldrin. Dieldrin is above the bed sediment reporting limit in this CIMP, but below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).
- For PCBs (**Table D-15**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Additionally, estimated detection limits in the suspended sediment are at or below target bed sediment reporting limits for this CIMP and below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).
- For PAHs (**Table D-16**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Most individual PAH compounds would be expected to be detectable in the suspended sediment at concentrations about 2.5 times greater that the target bed sediment reporting limits for this CIMP and the target reporting limits presented in the SWAMP QAPP (SWRCB, 2008). Approximately half of the individual PAH compounds are above the target reporting limits presented in the SQO Technical Support Manual (SCCWRP, 2009), while the other half are below. Two compounds, naphthalene and phenanthrene, would have detection limits roughly 6 times the target bed sediment reporting limits for this CIMP. Naphthalene is an extremely light weight PAH that is not considered a major analyte of concern in storm water.

As noted previously, metals of interest are quantifiable with standard analytical methods. Detection limits for trace metals (**Table D-2**) are suitable for calculation of concentrations in suspended solids and the concentration of trace metals associated with the particulate fraction will be calculated as:

$$C_P=C_T-C_D$$

where C_T =Concentration of total recoverable metals

C_D =Concentration of dissolved fraction

C_P =Concentration of the particulate fraction

USEPA's guidance document for development of metals translators (EPA, 1996) uses the same approach for calculation of the trace metals in the particulate fraction.

In summary, all but one of the target reporting limits are below relevant TMDL targets and the overwhelming majority are below bed sediment reporting limits identified in this CIMP and the SWAMP QAPP (SWRCB, 2008) and SQO Technical Support Manual (SCCWRP, 2009). The approach to analyzing whole water samples to estimate concentrations of target pollutants on bed sediment provides an opportunity to improve the understanding of loads during multiple storms each year.

Table D-14.
Summary of Median TSS Measurements (mg/L)
at the San Gabriel River Mass Emission Site

Waterbody	LA County Monitoring Site ID	Median
San Gabriel River	S14	113

Table D-15.
Recommended Methods, Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for Organochlorine Pesticides and Total PCBs

Constituent and Analytical Method	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2008) Reporting Limit	SQO Technical Support Manual (2009) Reporting Limit	Harbors Toxics TMDL Sediment Target (Indirect Effects)	Harbors Toxics TMDL Sediment Target (Direct Effects)	Puddingstone Reservoir Sediment Target (Indirect Effects)
	pg/L	ng/g – dry wt						
Chlordane Compounds (EPA 1699)								
alpha-Chlordane	40	0.4	0.5	1	0.5	1.3 (Total Chlordane)	0.5 (Total Chlordane)	0.75 (Total Chlordane)
gamma-Chlordane	40	0.4	0.5	1	0.54			
Oxychlordane	40	0.4	0.5	1	NA			
trans-Nonachlor	40	0.4	0.5	1	4.6			
cis-Nonachlor	40	0.4	0.5	2	NA			
Other OC Pesticides (EPA 1699)								
2,4'-DDD	40	0.4	0.5	2	0.5	1.9 (Total DDT)	1.58 (Total DDT)	3.94 (Total DDT)
2,4'-DDE	80	0.4	0.5	2	0.5			
2,4'-DDT	80	0.4	0.5	3	0.5			
4,4'-DDD	40	0.4	0.5	2	0.5			
4,4'-DDE	80	0.4	0.5	2	0.5			
4,4'-DDT	80	0.4	0.5	5	0.5			
Total DDT	80	0.4	---	---	0.5			
Dieldrin	40	0.4	0.02	2	2.7	NA	0.02	0.22
Total PCBs (EPA 1668)	5-20	0.05-0.2	0.2	0.2	3.0	3.2	22.7	0.59

1 Water MLs based upon 1 liter of water.

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2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

3 Target is for the summed value of the individual constituents and is not specific to each constituent species.

NA Not applicable

Table D-16.
Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for PAHs

Constituent	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2009) Reporting Limit	SQO Technical Support Manual Reporting Limit	Harbors Toxics TMDL Sediment Target (Direct Effects)
	pg/L	ng/g – dry wt				
1-Methylnaphthalene	5	50	20	20	20	552 (Low Weight) (3) 1700 (High Weight) (3) 4700 (Total PAHs)
1-Methylphenanthrene	5	50	20	20	20	
2-Methylnaphthalene	5	50	20	20	20	
2,6-Dimethylnaphthalene	5	50	20	20	20	
Acenaphthene	5	50	20	20	20	
Anthracene	5	50	20	20	20	
Benzo(a)anthracene	5	50	20	20	80	
Benzo(a)pyrene	5	50	20	20	80	
Benzo(e)pyrene	5	50	20	20	80	
Biphenyl	5	50	20	20	20	
Chrysene	5	50	20	20	80	
Dibenz(a,h)anthracene	5	50	20	20	80	
Fluoranthene	5	50	20	20	80	
Fluorene	5	50	20	20	20	
Naphthalene	12.5	125	20	20	20	
Perylene	5	50	20	20	80	
Phenanthrene	12.5	125	20	20	20	
Pyrene	5	50	20	20	80	

1 Water MLs based upon 1 liter of water and CARB 429m. Detection limits are based upon a final extract of 500 µL. If the SSC is low, either an additional liter of water can be extracted to halve the detection limit or the final extract volume can be reduced. Depending on sample characteristics, the extract volume can be reduced to as little as 50-100 µL which would drop MLs by a factor of 0.1 to 0.2 times the listed ML.

2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

2 *Low Molecular Weight PAHs* Low weight PAHs include Acenaphthene, Anthracene, Phenanthrene, Biphenyl, Naphthalene, 2,6-dimethylnaphthalene, Fluorene, 1-methylnaphthalene, 2-methylnaphthalene, 1-methylphenanthrene, *High Molecular Weight PAHs:* Benzo(a)anthracene, Benzo(a)pyrene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Perylene, Pyrene.

NA Not applicable

D-3 Quality Control Sample Collection

Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. Detailed descriptions of quality control samples are presented in **Section D-3.1** of this Attachment.

D-3.1 Quality Assurance/Quality Control

This section describes the quality assurance and quality control requirements and processes. Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. There are no requirements for quality control for field analysis of general parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and pH) outlined in SWAMP guidance documents. However, field crews will be required to calibrate equipment as outlined in **Section D-2** of this Attachment. **Table D-17** presents the quality assurance parameter addressed by each quality assurance requirement as well as the appropriate corrective action if the acceptance limit is exceeded.

Table D-17.
Quality Control Requirements

Quality Control Sample Type	QA Parameter	Frequency(1)	Acceptance Limits	Corrective Action
Quality Control Requirements – Field				
Equipment Blanks	Contamination	5% of all samples(2)	< MDL	Identify equipment contamination source. Qualify data as needed.
Field Blank	Contamination	5% of all samples	< MDL	Examine field log. Identify contamination source. Qualify data as needed.
Field Duplicate	Precision	5% of all samples	RPD < 25% if |Difference| > RL	Reanalyze both samples if possible. Identify variability source. Qualify data as needed.
Quality Control Requirements – Laboratory				
Method Blank	Contamination	1 per analytical batch	< MDL	Identify contamination source. Reanalyze method blank and all samples in batch. Qualify data as needed.
Lab Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Recalibrate and reanalyze.
Matrix Spike	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides (3)	Check LCS/CRM recovery. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Matrix Spike Duplicate	Precision	1 per analytical batch	RPD < 30% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Laboratory Control Sample (or CRM or Blank Spike)	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides (3)	Recalibrate and reanalyze LCS/ CRM and samples.
Blank Spike Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Surrogate Spike (Organics Only)	Accuracy	Each environmental and lab QC sample	30-150% Recovery3	Check surrogate recovery in LCS. Attempt to correct matrix problem and reanalyze sample. Qualify data as needed.

MDL = Method Detection Limit RL = Reporting Limit RPD = Relative Percent Difference
LCS = Laboratory Control Sample/Standard CRM = Certified/ Standard Reference Material

GWQC = General Water Quality Constituents

1. "Analytical batch" refers to a number of samples (not to exceed 20 environmental samples plus the associated quality control samples) that are similar in matrix type and processed/prepared together under the same conditions and same reagents (equivalent to preparation batch).
3. Equipment blanks will be collected by the field crew before using the equipment to collect sample.
4. Or control limits set at + 3 standard deviations based on actual laboratory data.

D-3.2 QA/QC Requirements and Objectives

D-3.2.1 Comparability

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. For this monitoring program, this objective will be ensured mainly through use of standardized procedures for field measurements, sample collection, sample preparation, laboratory analysis, and site selection; adherence to quality assurance protocols and holding times; and reporting in standard units. Additionally, comparability of analytical data will be addressed through the use of standard operating procedures and extensive analyst training at the analyzing laboratory.

D-3.2.2 Representativeness

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. For the CIMP, this objective will be addressed by the overall design of the program. Representativeness is attained through the selection of sampling locations, methods, and frequencies for each parameter of interest, and by maintaining the integrity of each sample after collection. Sampling locations were chosen that are representative of various areas within the watershed and discharges from the MS4, which will allow for the characterization of the watershed and impacts MS4 discharges may have on water quality.

D-3.2.3 Completeness

Data completeness is a measure of the amount of successfully collected and validated data relative to the amount of data planned to be collected for the project. It is usually expressed as a percentage value. A project objective for percent completeness is typically based on the percentage of the data needed for the program or study to reach valid conclusions.

Because the CIMP is intended to be a long term monitoring program, data that are not successfully collected during a specific sample event will not be recollected at a later date. Rather subsequent events conducted over the course of the monitoring will provide robust data sets to appropriately characterize conditions at individual sampling sites and the watershed in general. For this reason, most of the data planned for collection cannot be considered absolutely critical, and it is difficult to set a meaningful objective for data completeness.

However, some reasonable objectives for data are desirable, if only to measure the effectiveness of the program when conditions allow for the collection of samples (i.e., flow is present). The program goals for data completeness, shown in **Table D-4**, are based on the planned sampling frequency, SWAMP recommendations, and a subjective determination of the relative importance of the monitoring element within the CIMP. If, however, sampling sites do not allow for the collection of enough samples to provide representative data due to conditions (i.e., no flow) alternate sites will be considered. Data completeness will be evaluated on a yearly basis.

D-3.3 QA/QC Field Procedures

Quality control samples to be prepared in the field will consist of equipment blanks, field blanks, and field duplicates as described below.

D-3.3.1 Equipment Blanks

The purpose of analyzing equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment and analyzed for relevant pollutants before sending the equipment to the field crew. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The equipment blanks will be analyzed using the same analytical methods specified for environmental samples. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

D-3.3.2 Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Per the Quality Assurance Management Plan for SWAMP (SWRCB, 2008) field blanks are to be collected as follows:

- At a frequency of 5% of samples collected for the following constituents: trace metals in water (including mercury), VOC samples in water and sediment, DOC samples in water, and bacteria samples.
- Field blanks for other media and analytes should be conducted upon initiation of sampling, and if field blank performance is acceptable (as described in **Table D-17**), further collection and analysis of field blanks for these other media and analytes need only be performed on an as-needed basis, or during field performance audits. An as-needed basis for the ESGV CIMP will be annually.

Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples.

If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.3.3 Field Duplicates

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples, and analyzed along with the associated environmental samples. Field duplicates will consist of two grab samples collected simultaneously, to the extent practicable. If the Relative Percent Difference (RPD) of field duplicate results is greater than the percentage stated in **Table D-17** and the absolute difference is greater than the RL, both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.4 QA/QC Laboratory Analyses

Quality control samples prepared in the laboratory will consist of method blanks, laboratory duplicates, matrix spikes/duplicates, laboratory control samples (standard reference materials), and toxicity quality controls.

D-3.4.1 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be corrected, and the associated samples should be reanalyzed.

D-3.4.2 Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of duplicate laboratory fortified method blanks. If the RPD for any analyte is greater than the percentage stated in **Table D-17** and the absolute difference between duplicates is greater than the RL, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and laboratory duplicates should be reanalyzed.

D-3.4.3 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

D-3.4.4 Laboratory Control Samples

The purpose of analyzing laboratory control samples (or a standard reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory fortified method blanks or a standard reference material. If recovery of any analyte is outside the acceptable range, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and the laboratory control sample should be reanalyzed.

D-3.4.5 Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated or isotopically labeled compounds that are not usually present in environmental media. Results are expressed as percent recovery of the surrogate spike. Surrogate spikes are applicable for analysis of PCBs and pesticides.

D-3.4.6 Toxicity Quality Control

For aquatic toxicity tests, the acceptability of test results is determined primarily by performance-based criteria for test organisms, culture and test conditions, and the results of

control bioassays. Control bioassays include monthly reference toxicant testing. Test acceptability requirements are documented in the method documents for each bioassay method.

D-4 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Frequencies and procedures for calibration of analytical equipment used by each contract laboratory are documented in the QA Manual for each laboratory. Any deficiencies in analytical equipment calibration should be managed in accordance with the QA Manual for each contract laboratory. Any deficiencies that affect analysis of samples submitted through this program must be reported to the ESGV Group. Laboratory QA Manuals are available for review at the analyzing laboratory.

D-5 DATA MANAGEMENT

Section D-5 details the procedures for managing and reporting data meet the goals and objectives of the CIMP and in turn the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful data management and reporting.

D-5.1 Data Review, Verification, and Validation Requirements

The acceptability of data is determined through data verification and data validation. Both processes are discussed in detail below. In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the contract laboratory's QA Manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory's QA Officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Appendix 2 provides equations that are used to calculate precision, accuracy, and completeness of the data. Decisions to reject or qualify data will be made by the ESGV Group, based on the evaluation of field and laboratory quality control data, according to procedures outlined in Section 13 of Caltrans document No. CTSW-RT-00-005, Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition (LWA, 2000). Section 13 of the Caltrans Guidance Manual is included as Appendix 3.

D-5.1.1 Data Verification

Data verification involves verifying that required methods and procedures have been followed at all stages of the data collection process, including sample collection, sample receipt, sample preparation, sample analysis, and documentation review for completeness. Verified data have been checked for a variety of factors, including transcription errors, correct application of dilution factors, appropriate reporting of dry weight versus wet weight results, and correct

application of conversion factors. Verification of data may also include laboratory qualifiers, if assigned.

Data verification should occur in the field and the laboratory at each level (i.e., all personnel should verify their own work) and as information is passed from one level to the next (i.e., supervisors should verify the information produced by their staff). Records commonly examined during the verification process include field and sample collection logs, COC forms, sample preparation logs, instrument logs, raw data, and calculation worksheets.

In addition, laboratory personnel will verify that the measurement process was "in control" (i.e., all specified data quality objectives were met or acceptable deviations explained) for each batch of samples before proceeding with the analysis of a subsequent batch. Each laboratory will also establish a system for detecting and reducing transcription and/or calculation errors prior to reporting data.

D-5.1.2 Data Validation

In general, data validation involves identifying project requirements, obtaining the documents and records produced during data verification, evaluating the quality of the data generated, and determining whether project requirements were met. The main focus of data validation is determining data quality in terms of accomplishment of measurement quality objectives (i.e., meeting QC acceptance criteria). Data quality indicators, such as precision, accuracy, sensitivity, representativeness, and completeness, are typically used as expressions of data quality. The ESGV Group, will review verified sample results for the data set as a whole, including laboratory qualifiers, summarize data and QC deficiencies and evaluate the impact on overall data quality, assign data validation qualifiers as necessary, and prepare an analytical data validation report. The validation process applies to both field and laboratory data.

In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the analyzing laboratory's QA Manual will be used to accept, reject, or qualify the data generated. The laboratory will only submit data that have met data quality objectives, or data that have acceptable deviations explained. When QC requirements have not been met, the samples will be reanalyzed when possible, and only the results of the reanalysis will be submitted, provided that they are acceptable. Each laboratory's QA Officer is responsible for validating the data it generates.

D-5.1.3 Data Management

Analytical Data Reports will be sent to and kept by the ESGV Group. Each type of report will be stored separately and ordered chronologically. The field crew shall retain the original field logs. The contract laboratory shall retain original COC forms. The contract laboratory will retain copies of the preliminary and final data reports. Concentrations of all parameters will be

calculated as described in the laboratory SOPs or referenced method document for each analyte or parameter.

The field log and analytical data generated will be converted to a standard database format maintained on personal computers. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the final database.

D-6 Reporting

The MRP includes a number of reporting requirements to summarize CIMP implementation efforts, the data collected as part of the CIMP, as well as to report on implementation of the Permit requirements as a whole. The following sections detail monitoring and reporting requirements outlined in the MRP and provides information on how the water, sediment, and tissue data collected as part of this CIMP data are to be used.

D-6.1 Semi-Annual Analytical Data Reports

As required by Part XIV.L of the MRP, results from each of the receiving water or outfall based monitoring stations conducted in accordance with the SOP shall be sent electronically to the Regional Board's Stormwater site at MS4stormwaterRB4@waterboards.ca.gov. The monitoring results will be submitted on a semi-annual basis and will highlight exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds. Corresponding sample dates and monitoring locations will be included. Data will be transmitted in the most recent Southern California SMC's Standardized Data Transfer Formats. Reports of monitoring activities will include, at a minimum, the following information (records of which are required by Part XIV.A.1.c of the MRP):

1. The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
2. The individual(s) who performed the sampling or measurements.
3. The date(s) analyses were performed.
4. The individual(s) who performed the analyses.
5. The analytical techniques or methods used.
6. The results of such analyses.
7. The data sheets showing toxicity test results.

D-6.2 Annual Monitoring Reports

As outlined in Part XVI.A of the MRP, the annual reporting process is intended to provide the Regional Board with summary information to allow for the assessment of the Permittee's:

1. Participation in one or more Watershed Management Programs.
2. Impact of each Permittee(s) stormwater and non-stormwater discharges on the receiving water.
3. Each permittee's compliance with RWLs, numeric WQBELs, and non-stormwater action levels.
4. The effectiveness of each Permittee(s) control measures in reducing discharges of pollutants

from the MS4 to receiving waters.

5. Whether the quality of MS4 discharges and the health of receiving waters is improving, staying the same, or declining as a result of watershed management program efforts, and/or TMDL implementation measures, or other MCMs.
6. Whether changes in water quality can be attributed to pollutant controls imposed on new development, re-development, or retrofit projects.

The annual report process also seeks to provide a forum for Permittee(s) to discuss the effectiveness of its past and ongoing control measure efforts and to convey its plans for future control measures. Detailed data and information will also be provided in a clear and transparent fashion to allow the Regional Board and the general public to review and verify conclusions presented by the Permittee. Annual reports shall be organized to include the information as described in the following subsections.

D-6.3 Watershed Summary Information

According to Section XVII.B of the MRP, Permittees shall include the information requested in MRP Section XVII.B parts A.1 through A.3 in its odd year Annual Report (e.g., Year 1, 3, 5). The requested information shall be provided for each watershed within the Permittee's jurisdiction. Alternatively, Permittees participating in a WMP may provide the requested information through the development and submission of a WMP plan and any updates. As the ULARWMG is submitting an WMP the information is not required as a separate submittal. However, updates to information requested in Section XVII.B parts A.1 through A.3 (presented in **Sections D-6.3.1** through **D-6.3.3** below) will be noted in WMP plan updates.

D-6.3.1 Watershed Management Area

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for baseline information regarding the following watershed management area details:

1. The effective TMDLs, applicable WQBELs and RWLs, and implementation and reporting requirements, and compliance dates.
2. CWA section 303(d) listings of impaired waters not addressed by TMDLs.
3. Results of regional bioassessment monitoring.
4. A description of known hydromodificaitons to receiving waters and a description, including locations, of natural drainage systems.
5. Description of groundwater recharge areas including number and acres.
6. Maps and/or aerial photographs identifying the location of Environmentally Sensitive Areas (ESAs), Areas of Special Biological Significance (ASBS), natural drainage systems, and groundwater recharge areas.

D-6.3.2 Subwatershed (HUC-12) Descriptions

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the following Subwatershed (twelve digit Hydrologic Unit Code or HUC-12) descriptions:

1. Description including HUC-12 number, name and a list of all tributaries named in the Basin Plan.
2. Land use map of the HUC-12 watershed.
3. 85th percentile, 24-hour rainfall isohyetal map for the subwatershed.
4. One-year, one-hour storm intensity isohyetal map for the subwatershed.
5. MS4 map for the subwatershed, including major MS4 ourfalls and all low-flow diversions.

D-6.3.3 Description of Permittee(s) Drainage Area within the Subwatershed

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the Drainage Area within the subwatershed:

1. A subwatershed map depicting the Permittee(s) jurisdictional area and the MS4, including major outfalls (with identification numbers), and low flow diversions located within the Permittee(s) jurisdictional area.
2. Provide the estimated baseline percent of effective impervious area (EIA) within the Permitte(s) jurisdictional area.

D-6.3.4 Annual Assessment and Reporting

The following sections will be included in the ULARWMA Annual Report to meet the MRP requirements. The Annual Report will clearly identify all data collected and strategies, control measures, and assessments implemented by each Permittee within the ULARWMA, as well as those implemented by multiple Permittees on a watershed scale.

Stormwater Control Measures

All reasonable efforts will be made to determine, compile, analyze, and summarize the following information for each Permittee:

1. Estimated cumulative change in percent EIA since the effective date of the Order, and if possible, the estimated change in the stormwater runoff volume during the 85th percentile storm event.
2. Summary of New Development/Re-Development Projects constructed within the Permittee(s) jurisdictional area during the reporting year.
3. Summary of Retrofit Projects that reduced or disconnected impervious area from MS4 during the reporting year.
4. Summary of other projects designed to intercept stormwater runoff prior to discharge to the MS4 during the reporting year.
5. Estimate the total runoff volume retained on site by the implementation of such projects during the reporting year.
6. Summary of actions taken in compliance with TMDL implementation plans or approved WMP to implement TMDL provisions.
7. Summary of riparian buffer/wetland restoration projects completed during the reporting year. For

riparian buffers include width, length and vegetation type; for wetland include acres restored, enhanced, or created.

8. Summary of other MCMs implemented during the reporting year, as the Permittee deems relevant.
9. Status of all multi-year efforts that were not completed in the current year and will therefore continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee(s) will provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

Effectiveness Assessment of Stormwater Control Measures

The following information will be included to detail Stormwater Control Measures during the reporting year:

1. Rainfall summary for the reporting year, including the number of storm events, highest volume event (inches/24 hours), highest number of consecutive days with measurable rainfall, total rainfall during the reporting year compared to average annual rainfall for the WMP area.
2. A summary table describing rainfall during stormwater outfall and wet-weather receiving water monitoring events. The summary description will include the date, time that the storm commenced and the storm duration in hours, the highest 15-minute recorded storm intensity (converted to inches/hour), the total storm volume (inches), and the time between the storm event sampled and the end of the previous storm event.
3. Where control measures were designed to reduce impervious cover or stormwater peak flow and flow duration, hydrographs or flow data of pre- and post-control activity for the 85th percentile, 24-hour rain event, if available.
4. For natural drainage systems, a reference watershed flow duration curve and comparison to a flow duration curve for the WMP area under current conditions.
5. An assessment as to whether the quality of stormwater discharges as measured at designed outfalls is improving, staying the same, or declining. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, or other means may be used to develop and support the assessment's conclusions.
6. An assessment as to whether wet-weather receiving water quality is improving, staying the same or declining, when normalized for variations in rainfall patterns. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.
7. Status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factors(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Non-stormwater Water Control Measures

The following information will be included to detail non-stormwater control measures:

1. An estimation of the number of major outfalls within the WMP area.
2. The number of outfalls that were screened for significant non-stormwater discharges during the reporting year.

3. The cumulative number of outfalls that have been screened for significant non-stormwater discharges since the date the Permit was adopted through the reporting year.
4. The number of outfalls with confirmed significant non-stormwater discharge.
5. The number of outfalls where significant non-stormwater discharge was attributed to other NPDES permitted discharges; other authorized non-stormwater discharges; or conditionally exempt discharges.
6. The number of outfalls where significant non-stormwater discharges were abated as a result of the WMP Group actions.
7. The number of outfalls where non-stormwater discharges was monitored.
8. The status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Effectiveness Assessment of Non-Stormwater Control Measures

The following information will be included to assess non-stormwater control measures effectiveness:

1. An assessment as to whether receiving water quality within the WMP area is impaired, improving, staying the same or declining during the dry-weather conditions. Water quality data from the reporting year to previous years with similar dry-weather flows may be compared, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.
2. An assessment of the effectiveness of the control measures in effectively prohibiting non-stormwater discharges through the MS4 to the receiving water.
3. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Integrated Monitoring Compliance Report

The following information will be included to assess the Permittee(s) compliance with applicable TMDLs, WQBELs, RWLs, and action levels:

1. An Integrated Monitoring Report that summarizes all identified exceedances of the following against applicable RWLs, WQBELs, non-stormwater action levels, and aquatic toxicity thresholds:
   a. Outfall-based stormwater monitoring data
   b. Wet weather receiving water monitoring data
   c. Dry weather receiving water data
   d. NSW outfall monitoring data

   All sample results that exceeded one more applicable thresholds shall be readily identified.
2. If aquatic toxicity was confirmed and a TIE was conducted, the toxic chemicals, as determined by the TIE, will be identified. All relevant data to allow the Regional Board to review the adequacy and findings of the TIE will be included. This shall include, but not be limited to:
   a. The sample(s) date
   b. Sample(s) start and end time
   c. Sample type(s)
   d. Sample location(s) as depicted on a map

  e. The parameters, analytical results, and applicable limitation.
3. A description of efforts that were taken to mitigate and/or eliminate all non-stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.
4. A description of efforts that were taken to address stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.
5. Where RWLs were exceeded, provide a description of efforts that were taken to determine whether discharges from the MS4 caused or contributed to the exceedances and all efforts that were taken to control the discharge of pollutants from the MS4 to those receiving waters in response to the exceedances.

Adaptive Management Strategies

The following information will be included to outline Adaptive Management Strategies:

1. The most effective control measures, why the measures were effective, and how other measures will be optimized based on past experiences.
2. The least effective control measures, why the measures were deemed ineffective, and how the controls measures will be modified or terminated.
3. Significant changes to control measures during the prior year and the rationale for the changes.
4. All significant changes to control measures anticipated to be made next year and rationale for the changes. Those changes requiring approval of the Regional Board or its Executive Officer will be clearly identified at the beginning of the Annual Report.
5. A detailed description of control measures to be applied to New Development or Re-development projects disturbing more than 50 acres.
6. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Supporting Data and Information

All monitoring data and associated meta-data used to prepare the Annual Report will be summarized in an MS Excel© spreadsheet and sorted by monitoring station/outfall identifier linked to the WMP area map. The data summary will include the date, sample type (flow-weighted composite, grab, field measurement), sample start and stop times, parameter, analytical method, value, and units. The date field will be linked to a database summarizing the weather data for the sampling date including 24-hour rainfall, rainfall intensity, and days since the previous rain event.

D-6.4 Signatory and Certification Requirements

All applications, reports, or information submitted to the Regional Board, State Board, and/or USEPA will be signed and certified as follows:

1. All applications submitted to the Regional Board shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer includes: (i) the chief executive officer of the agency (e.g., Mayor), or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., City Manager, Director of Public Works, City Engineer, etc.).

2. All reports required by the Permit and other information requested by the Regional Board, State Board, or USEPA shall be signed by either a principal executive officer or ranking elected official or by a duly authorized representative of a principal executive officer or ranking elected official. A person is a duly authorized representative only if:
    a. The authorization is made in writing by a principal executive officer or ranking elected official.
    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
    c. The written authorization is submitted to the Regional Board.
3. If an authorization of a duly authorized representative is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization will be submitted to the Regional Board prior to or together with any reports, information, or applications, to be signed by an authorized representative.
4. The following certification will be made by any person signing an application or report:
   "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."

D-6.5 Use of Submitted Data

As stated in Part II.A.2 of the MRP, a Primary Objective of the Monitoring Program is to assess compliance with RWLs and WQBELs established to implement TMDL wet weather and dry weather wasteload allocations WLAs. As such, a discussion of how the compliance evaluation will be conducted is warranted and is presented below.

D-6.5.1 Compliance Evaluation

The compliance evaluation will take into consideration the relationship between the types of monitoring and the pathways for determining compliance outlined in the Permit. For example, the receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP (Part II.E.1), receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not on its own indicate MS4 discharges caused or contributed to the RWL exceedance. As the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges, the exceedance of a RWL may have been caused or contributed to by a non-MS4 source. Additionally, an exceedance at an outfall location when the corresponding downstream receiving water location is in compliance with the water quality objectives and RWLs does not constitute an exceedance of a WQBEL.

Finally, reporting of compliance will be accomplished by evaluating the data, in addition to the status of WMP implementation consistent with the Permit (Parts VI.C.2, VI.C.3 and VI.E.2). Generally, reporting of compliance will consider whether the following conditions, as applicable, are met:

1. There are no violations of the effective WQBEL (i.e., interim or final) for the specific pollutant at the Permittee's applicable MS4 outfall(s).
2. There are no exceedances of an applicable RWLs for the specific pollutant in the receiving water(s) at, or downstream of, the Permittee's outfall(s).
3. There is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the time period subject to the WQBEL and/or RWL for the pollutant(s) associated with a specific TMDL.
4. In drainage areas where Permittees are implementing an WMP, (i) all non-stormwater and (ii) all stormwater runoff up to and including the volume equivalent to the 85th percentile, 24-hour event is retained for the drainage area tributary to the applicable receiving water.
5. The approved ULARWMG WMP is being implemented pursuant to Part VI.C of the Permit.
6. Conditions of effective Time Schedule Orders (TSOs) are met.
7. Exceedances of RWLs not otherwise addressed by a TMDL are addressed pursuant to Part VI.C.2 of the Permit.

In addition, evaluation of compliance for pollutants subject to TMDLs will consider the requirements specified in the applicable TMDLs described in the following subsections.

SGR Metals TMDL Interim Milestones Compliance Determination

Per the Metals TMDL, the WMP Group is required to show increasing percentages of the total watershed meeting dry and wet weather WLAs phased over a 12-year period. Table D-18 lists the compliance milestone dates as well as the required percent compliance for the total watershed. The percent compliance for the WMP Group will be calculated using an annual average. The annual average will be determined by averaging the total percentage for all of the sampling events occurring during an individual year to adequately characterize the dry or wet weather conditions for the reporting period.

Table D-18.
Compliance Milestone Dates and Required Percent Compliance

Compliance Milestone Date	Dry Weather Percent of Total Drainage Area Served by MS4 Meeting WLA	Wet Weather Percent of Total Drainage Area Served by MS4 Meeting WLA
September 30, 2017	30%	10%
September 30, 2020	70%	35%
September 30, 2023	100%	65%
September 30, 2026	100%	100%

Use of Specie-Specific Data for Chlordanes, PCBs, and PAHs

Chlordanes, PCBs, and PAHs are unique in that they are pollutant categories which may be analyzed for the species that make up the pollutant category and the species of interest varies depending on the purpose of data collection. The individual constituents are summed to determine "total" concentrations. The following describes how individual chlordane, PCB, and PAH species will be summed for comparison to applicable WQBELs, RWLs, TMDL targets, WLAs, and/or State adopted objectives.

Analysis included in this CIMP for chlordane includes the following species: alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor. The calculation of total chlordane will be conducted as follows:

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of alpha-chlordane, gamma-chlordane, trans-Nonachlor will be summed.
- When evaluating sediment concentrations and loads and tissue concentrations associated with indirect effects, quantified concentrations of alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor will be summed.
- Upon approval by the State Board, for the purposes of conducting analyses associated with the Decision Support Tool (DST) for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PCBs includes the following species: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 and congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153,

156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209. The calculation of total PCBs will be conducted as follows:

- When evaluating water concentrations for the purposes of comparing to the California Toxics Rule (CTR) aquatic life criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 will be summed.

- When evaluating water concentrations for the purposes of comparing to the CTR human health criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 or congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209 will be summed.

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of congeners 8,18, 28, 44, 52, 66, 101, 105, 118, 128, 138, 153, 170, 180, 187, 189, 195, 206, and 209 will be summed.

- When evaluating sediment and tissue samples associated with indirect effects, quantified concentrations of congeners 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206 will be summed

- Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PAHs includes the following constituents: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene. The calculation of total PAHs will be conducted as follows:

- When evaluating sediment and tissue samples associated with direct and indirect effects, quantified concentrations of Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene will be summed.

Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Attachment D

Appendix 1
Example Field and Chain-of-Custody Forms

EXAMPLE Field Log

GENERAL INFORMATION Date: __________

Site ID: ________________________________ Sampling Personnel: ________________________

GPS Coordinates: (lat) ____________________ (lon) ________________________ Picture/Video #: __________

OBSERVATIONS

Weather:____

Water Color:____________________________ In stream Activity:______________________________

Water Characteristics (flow type, odor, turbidity, floatables):___________________________________

Other comments (trash, wildlife, recreational uses, homeless activity, etc. – Use notes section if more room is needed):

____

In situ **WATER QUALITY MEASUREMENTS**

Time	Temp (^{0}C)	pH	D.O. (mg/L)	D.O. % Sat	Elec Cond. (uS/cm)

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
				Field blank
				Field duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

Example Field Log

FLOW MEASUREMENTS WITH VELOCITY METER

Estimated Total Width of Flowing Water (ft): ____________ Distance measured from (circle): RIGHT or LEFT

Measurement Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Distance from Bank (ft)														
Depth (ft)														
Velocity (ft/s)														

FLOW MEASUREMENTS WITH FLOAT AND STOPWATCH Number of Flow Paths:______

Fill out Path #	Path#	Path#	Path#	Path#	Path#
Width of Flow at **Top** of Marked Section:					
Width of Flow at **Middle** of Marked Section:					
Width of Flow at **Bottom** of Marked Section:					
Depth of Flow at 0% of **Top** Marked Section:					
Depth of Flow at 25% of **Top** Marked Section:					
Depth of Flow at 50% of **Top** Marked Section:					
Depth of Flow at 75% of **Top** Marked Section:					
Depth of Flow at 100% of **Top** Marked Section:					
Depth of Flow at 0% of **Middle** Marked Section:					
Depth of Flow at 25% of **Middle** Marked Section:					
Depth of Flow at 50% of **Middle** Marked Section:					
Depth of Flow at 75% of **Middle** Marked Section:					
Depth of Flow at 100% of **Middle** Marked Section:					
Depth of Flow at 0% of **Bottom** Marked Section					
Depth of Flow at 25% of **Bottom** Marked Section:					
Depth of Flow at 50% of **Bottom** Marked Section:					
Depth of Flow at 75% of **Bottom** Marked Section:					
Depth of Flow at 100% of **Bottom** Marked Section					
Distance Marked-off for Velocity:					
Time 1:					
Time 2:					
Time 3:					

Specify if measurements are in inches or feet using "in" or "ft"

FLOW MEASUREMENT WITH GRADUATED CONTAINER

Container Volume:_______________ Percent Capture:_________________

Time to fill container:

	Minutes	Seconds
Time1		
Time2		
Time3		

ADDITIONAL FLOW MEASUREMENT NOTES:

Example Chain-of-Custody Form

CHAIN-OF-CUSTODY RECORD

Date:

Lab ID:

Destination Lab:

Address:

Phone:

Fax:

Sampled By:

Contact:

Project:

Client Sample Id	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.											Notes

Sender Comments:	Relinquished By (1):	Relinquished By (2):
	Signature:	
	Print:	
	Organization:	
	Date: Time:	Date: Time:

Laboratory Comments:	Received By (1):	Received By (2):
	Signature:	
	Print:	
	Organization:	
	Date: Time:	Date: Time:

Crew:

Attachment D

Appendix 2
Chapter 13 QA/QC Data Evaluation from Caltrans Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition

SECTION 13
QA/QC DATA EVALUATION

All data reported by the analytical laboratory must be carefully reviewed to determine whether the project's data quality acceptability limits or objectives (DQOs) have been met. This section describes a process for evaluation of all laboratory data, including the results of all QA/QC sample analysis.

Before any results are reported by the laboratory, the deliverable requirements should be clearly communicated to the laboratory, as described in the "Laboratory Data Package Deliverables" discussion in ***Section 12***.

The current section discusses QA/QC data evaluation in the following two parts:

KEY TOPICS

- **Initial Data Quality Screening**
- **Data Quality Evaluation**

The initial data quality screening identifies problems with laboratory reporting while they may still be corrected. When the data reports are received, they should be immediately checked for conformity to chain of custody requests to ensure that all requested analyses have been reported. The data are then evaluated for conformity to holding time requirements, conformity to reporting limit requests, analytical precision, analytical accuracy, and possible contamination during sampling and analysis. The data evaluation results in rejection, qualification, and narrative discussion of data points or the data as a whole. Qualification of data, other than rejection, does not necessary exclude use of the data for all applications. It is the decision of the data user, based on specifics of the data application, whether or not to include qualified data points.

➢ INITIAL DATA QUALITY SCREENING

The initial screening process identifies and corrects, when possible, inadvertent documentation or process errors introduced by the field crew or the laboratory. The initial data quality control screening should be applied using the following three-step process:

1. *Verification check between sampling and analysis plan (SAP), chain of custody forms, and laboratory data reports*: Chain of custody records should be compared with field logbooks and laboratory data reports to verify the accuracy of all sample identification and to ensure that all samples submitted for analysis have a value reported for each parameter requested. Any deviation from the SAP that has not yet

been documented in the field notes or project records should be recorded and corrected if possible.

Sample representativeness should also be assessed in this step. The minimum acceptable storm capture parameters (number of aliquots and percent storm capture) per amount of rainfall are specified in ***Section 10***. Samples not meeting these criteria are generally not analyzed; however, selected analyses can be run at the Caltrans task manager's discretion. If samples not meeting the minimum sample representativeness criteria are analyzed, the resulting data should be rejected ("R") or qualified as estimated ("J"), depending upon whether the analyses were approved by Caltrans. Grab samples should be taken according to the timing protocols specified in the SAP. Deviations from the protocols will result in the rejection of the data for these samples or qualification of the data as estimated. The decision to reject a sample based on sample representativeness should be made prior to the submission of the sample to the laboratory, to avoid unnecessary analytical costs.

2. *Check of laboratory data report completeness*: As discussed in ***Section 12***, the end product of the laboratory analysis is a data report that should include a number of QA/QC results along with the environmental results. QA/QC sample results reported by the lab should include both analyses requested by the field crew (field blanks, field duplicates, lab duplicates and MS/MSD analysis), as well as internal laboratory QA/QC results (method blanks and laboratory control samples).

There are often differences among laboratories in terms of style and format of reporting. Therefore, it is prudent to request in advance that the laboratory conform to the style and format approved by Caltrans as shown in ***Section 14***. The Caltrans data reviewer should verify that the laboratory data package includes the following items:

- ✓ A narrative which outlines any problems, corrections, anomalies, and conclusions.
- ✓ Sample identification numbers.
- ✓ Sample extraction and analysis dates.
- ✓ Reporting limits for all analyses reported.
- ✓ Results of method blanks.
- ✓ Results of matrix spike and matrix spike duplicate analyses, including calculation of percent recovered and relative percent differences.
- ✓ Results of laboratory control sample analyses.
- ✓ Results of external reference standard analyses.
- ✓ Surrogate spike and blank spike analysis results for organic constituents.

✓ A summary of acceptable QA/QC criteria (RPD, spike recovery) used by the laboratory.

Items missing from this list should be requested from the laboratory.

3. *Check for typographical errors and apparent incongruities*: The laboratory reports should be reviewed to identify results that are outside the range of normally observed values. Any type of suspect result or apparent typographical error should be verified with the laboratory. An example of a unique value would be if a dissolved iron concentration has been reported lower than 500 μg/L for every storm event monitored at one location and then a value of 2500 μg/L is reported in a later event. This reported concentration of 2500 μg/L should be verified with the laboratory for correctness.

   Besides apparent out-of-range values, the indicators of potential laboratory reporting problems include:

   - Significant lack of agreement between analytical results reported for laboratory duplicates or field duplicates.
   - Consistent reporting of dissolved metals results higher than total or total recoverable metals.
   - Unusual numbers of detected values reported for blank sample analyses.
   - Inconsistency in sample identification/labeling.

   If the laboratory confirms a problem with the reported concentration, the corrected or recalculated result should be issued in an amended report, or if necessary the sample should be re-analyzed. If laboratory results are changed or other corrections are made by the laboratory, an amended laboratory report should be issued to update the project records.

➢ DATA QUALITY EVALUATION

The data quality evaluation process is structured to provide systematic checks to ensure that the reported data accurately represent the concentrations of constituents actually present in stormwater. Data evaluation can often identify sources of contamination in the sampling and analytical processes, as well as detect deficiencies in the laboratory analyses or errors in data reporting. Data quality evaluation allows monitoring data to be used in the proper context with the appropriate level of confidence.

QA/QC parameters that should be reviewed are classified into the following categories:

✔ Reporting limits

- ✔ Holding times
- ✔ Contamination check results (method, field, trip, and equipment blanks)
- ✔ Precision analysis results (laboratory, field, and matrix spike duplicates)
- ✔ Accuracy analysis results (matrix spikes, surrogate spikes, laboratory control samples, and external reference standards)

Each of these QA/QC parameters should be compared to data quality acceptability criteria, inalso known as the project's data quality objectives (DQOs). The key steps that should be adhered to in the analysis of each of these QA/QC parameters are:

1. Compile a complete set of the QA/QC results for the parameter being analyzed.
2. Compare the laboratory QA/QC results to accepted criteria (DQOs).
3. Compile any out-of-range values and report them to the laboratory for verification.
4. Prepare a report that tabulates the success rate for each QA/QC parameter analyzed.

This process should be applied to each of the QA/QC parameters as discussed below.

Reporting Limits

Stormwater quality monitoring program DQOs should contain a list of acceptable reporting limits that the lab is contractually obligated to adhere to, except in special cases of insufficient sample volume or matrix interference problems. The reporting limits used should ensure a high probability of detection. , Table 12-1 provides recommended reporting limits for selected parameters.

Holding Times

Holding time represents the elapsed time between sample collection time and sample analysis time. Calculate the elapsed time between the sampling time and start of analysis, and compare this to the required holding time. For composite samples that are collected within 24-hours or less, the time of the final sample aliquot is considered the "sample collection time" for determining sample holding time. For analytes with critical holding times (≤48 hours), composite samples lasting longer than 24-hours require multiple bottle composite samples. Each of these composite samples should represent less than 24 hours of monitored flow, and subsamples from the composites should have been poured off and analyzed by the laboratory for those constituents with critical holding times (***see Section 12***). It is important to review sample holding times to ensure that analyses occurred within the time period that is generally accepted to maintain stable parameter concentrations. Table 12-1 contains the holding times for selected parameters. If holding times are exceeded, inaccurate concentrations or false negative results may be reported.

Samples that exceed their holding time prior to analysis are qualified as "estimated", or may be rejected depending on the circumstances.

Contamination

Blank samples are used to identify the presence and potential source of sample contamination and are typically one of four types:

1. ***Method blanks*** are prepared and analyzed by the laboratory to identify laboratory contamination.
2. ***Field blanks*** are prepared by the field crew during sampling events and submitted to the laboratory to identify contamination occurring during the collection or the transport of environmental samples.
3. ***Equipment blanks*** are prepared by the field crew or laboratory prior to the monitoring season and used to identify contamination coming from sampling equipment (tubing, pumps, bailers, etc.).
4. ***Trip blanks*** are prepared by the laboratory, carried in the field, and then submitted to the laboratory to identify contamination in the transport and handling of volatile organics samples.
5. ***Filter blanks*** are prepared by field crew or lab technicians performing the sample filtration. Blank water is filtered in the same manner and at the same time as other environmental samples. Filter blanks are used to identify contamination from the filter or filtering process.

If no contamination is present, all blanks should be reported as "not detected" or "non-detect" (e.g., constituent concentrations should not be detected above the reporting limit). Blanks reporting detected concentrations ("hits") should be noted in the written QA/QC data summary prepared by the data reviewer. In the case that the laboratory reports hits on method blanks, a detailed review of raw laboratory data and procedures should be requested from the laboratory to identify any data reporting errors or contamination sources. When other types of blanks are reported above the reporting limit, a similar review should be requested along with a complete review of field procedures and sample handling. Often times it will also be necessary to refer to historical equipment blank results, corresponding method blank results, and field notes to identify contamination sources. This is a corrective and documentative step that should be done as soon as the hits are reported.

If the blank concentration exceeds the laboratory reporting limit, values reported for each associated environmental sample must be evaluated according to USEPA guidelines for data evaluations of organics and metals (USEPA, 1991; USEPA, 1995) as indicated in Table 13-1.

Table 13-1. USEPA Guidelines for Data Evaluation

Step	*Environmental Sample*	*Phthalates and other common contaminants*	*Other Organics*	*Metals*
1.	Sample > 10X blank concentration	No action	No action	No action
2.	Sample < 10X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	No action	Results considered an "upper limit" of the true concentration (note contamination in data quality evaluation narrative).
3.	Sample < 5X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.

Specifically, if the concentration in the environmental sample is less than five times the concentration in the associated blank, the environmental sample result is considered, for reporting purposes, "not-detected" *at the environmental sample result concentration* (phthalate and other common contaminant results are considered non-detect if the environmental sample result is less than ten times the blank concentration). The laboratory reports are not altered in any way. The qualifications resulting from the data evaluation are made to the evaluator's data set for reporting and analysis purposes to account for the apparent contamination problem. For example, if dissolved copper is reported by the laboratory at 4 μg/L and an associated blank concentration for dissolved copper is reported at 1 μg/L, data qualification would be necessary. In the data reporting field of the database (see ***Section 14***), the dissolved copper result would be reported as 4 μg/L*)*, the numerical qualifier would be reported as "<", the reporting limit would be left as reported by the laboratory, and the value qualifier would be reported as "U" ("not detected above the reported environmental concentration").

When reported environmental concentrations are greater than five times (ten times for phthalates) the reported blank "hit" concentration, the environmental result is reported unqualified at the laboratory-reported concentration. For example, if dissolved copper is reported at 11 μg/L and an associated blank concentration for dissolved copper is reported at 1 μg/L, the dissolved copper result would still be reported as 11 μg/L.

Precision

Duplicate samples provide a measure of the data precision (reproducibility) attributable to sampling and analytical procedures. Precision can be calculated as the relative percent difference (RPD) in the following manner:

$$RPD_i = \frac{2 * |O_i - D_i|}{(O_i + D_i)} * 100\%$$

where:

RPD_i = Relative percent difference for compound i

O_i = Value of compound i in original sample

D_i = Value of compound i in duplicate sample

The resultant RPDs should be compared to the criteria specified in the project's DQOs. The DQO criteria shown in Table 13-2 below are based on the analytical method specifications and laboratory-supplied values. Project-specific DQOs should be developed with consideration to the analytical laboratory, the analytical method specifications, and the project objective. Table 13-2 should be used as a reference point as the least stringent set of DQO criteria for Caltrans monitoring projects.

Laboratory and Field Duplicates

Laboratory duplicates are samples that are split by the laboratory. Each half of the split sample is then analyzed and reported by the laboratory. A pair of field duplicates is two samples taken at the same time, in the same manner into two unique containers. Subsampling duplicates are two unique, ostensibly identical, samples taken from one composite bottle (see ***Section 10***). Laboratory duplicate results provide information regarding the variability inherent in the analytical process, and the reproducibility of analytical results. Field duplicate analysis measures both field and laboratory precision, therefore, it is expected that field duplicate results would exhibit greater variability than lab duplicate results. Subsampling duplicates are used as a substitute for field duplicates in some situations and are also an indicator of the variability introduced by the splitting process.

The RPDs resulting from analysis of both laboratory and field duplicates should be reviewed during data evaluation. Deviations from the specified limits, and the effect on reported data, should be noted and commented upon by the data reviewer. Laboratories typically have their own set of maximum allowable RPDs for laboratory duplicates based on their analytical history. In most cases these values are more stringent than those listed in Table 13-2. Note that the laboratory will only apply these maximum allowable RPDs to laboratory duplicates. In most cases field duplicates are submitted "blind" (with pseudonyms) to the laboratory.

Environmental samples associated with laboratory duplicate results greater than the maximum allowable RPD (when the numerical difference is greater than the reporting limit) are qualified as "J" (estimated). When the numerical difference is less than the RL, no qualification is necessary. Field duplicate RPDs are compared against the maximum allowable RPDs used for laboratory duplicates to identify any pattern of problems with reproducibility of results. Any significant pattern of RPD exceedances for field duplicates should be noted in the data report narrative.

Corrective action should be taken to address field or laboratory procedures that are introducing the imprecision of results. The data reviewer can apply "J" (estimated) qualifiers to any data points if there is clear evidence of a field or laboratory bias issue that is not related to contamination. (Qualification based on contamination is assessed with blank samples.)

Laboratories should provide justification for any laboratory duplicate samples with RPDs greater than the maximum allowable value. In some cases, the laboratory will track and document such exceedances, however; in most cases it is the job of the data reviewer to locate these out-of-range RPDs. When asked to justify excessive RPD values for field duplicates, laboratories most often will cite sample splitting problems in the field. Irregularities should be included in the data reviewer's summary, and the laboratory's response should be retained to document laboratory performance, and to track potential chronic problems with laboratory analysis and reporting.

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy is measured as the percent recovery (%R) of spike compound(s). Percent recovery of spikes is calculated in the following manner:

$$\%R = 100\% * [(C_s - C) / S]$$

where:

$\%R$ = percent recovery

C_s = spiked sample concentration

C = sample concentration for spiked matrices

S = concentration equivalent of spike added

Accuracy (%R) criteria for spike recoveries should be compared with the limits specified in the project DQOs. A list of typical acceptable recoveries is shown in Table 13-2. As in the case of maximum allowable RPDs, laboratories develop acceptable criteria for an allowable range of recovery percentages that may differ from the values listed in Table 13-2.

Percent recoveries should be reviewed during data evaluation, and deviations from the specified limits should be noted in the data reviewer's summary. Justification for out of range recoveries should be provided by the laboratory along with the laboratory reports, or in response to the data reviewer's summary.

Laboratory Matrix Spike and Matrix Spike Duplicate Samples

Evaluation of analytical accuracy and precision in environmental sample matrices is obtained through the analysis of laboratory matrix spike (MS) and matrix spike duplicate (MSD) samples. A matrix spike is an environmental sample that is spiked with a known amount of the constituent being analyzed. A percent recovery can be calculated from the results of the spike analysis. A MSD is a duplicate of this analysis that is performed as a check on matrix recovery precision. MS and MSD results are used together to calculate RPD as with the duplicate samples. When MS/MSD results (%R and RPD) are outside the project specifications, as listed in Table 13-2, the associated environmental samples are qualified as "estimates due to matrix interference". Surrogate standards are added to all environmental and QC samples tested by gas chromatography (GC) or gas chromatography-mass spectroscopy (GC-MS). Surrogates are non-target compounds that are analytically similar to the analytes of interest. The surrogate compounds are spiked into the sample prior to the extraction or analysis. Surrogate recoveries are evaluated with respect to the laboratory acceptance criteria to provide information on the extraction efficiency of every sample.

External Reference Standards

External reference standards (ERS) are artificial certified standards prepared by an external agency and added to a batch of samples. ERS's are not required for every batch of samples, and are often only run quarterly by laboratories. Some laboratories use ERS's in place of laboratory control spikes with every batch of samples. ERS results are assessed the same as laboratory control spikes for qualification purposes (see below). The external reference standards are evaluated in terms of accuracy, expressed as the percent recovery (comparison of the laboratory results with the certified concentrations). The laboratory should report all out-of-range values along with the environmental sample results. ERS values are qualified as biased high" when the ERS recovery exceeds the acceptable recovery range and "biased low" when the ERS recovery is smaller than the recovery range.

Laboratory Control Samples

LCS analysis is another batch check of recovery of a known standard solution that is used to assess the accuracy of the entire recovery process. LCSs are much like ERS's except that a certified standard is not necessarily used with LCSs, and the sample is prepared internally by the laboratory so the cost associated with preparing a LCS sample is much lower than the cost of ERS preparation. LCSs are reviewed for percent recovery within

control limits provided by the laboratory. LCS out-of-range values are treated in the same manner as ERS out-of-range values. Because LCS and ERS analysis both check the entire recovery process, any irregularity in these results supersedes other accuracy-related qualification. Data are rejected due to low LCS recoveries when the associated environmental result is below the reporting limit.

A flow chart of the data evaluation process, presented on the following pages as Figures 13-1 (lab-initiated QA/QC samples) and 13-2 (field-initiated QA/QC), can be used as a general guideline for data evaluation. Boxes shaded black in Figures 13-1 and 13-2 designate final results of the QA/QC evaluation.

Table 13-2. Typical Control Limits for Precision and Accuracy for Analytical Constituents

Analyte	EPA Method Number or Standard Method	Maximum Allowable RPD	Recovery Upper Limit	Recovery Lower Limit
Conventionals				
BOD	405.1; SM 5210B	20%	80%	120%
COD	410.1; 410.4; SM 5220C; SM 5220D	20%	80%	120%
Hardness	130.2; 130.1; SM 2340B	20%	80%	120%
pH	150.1	20%	NA	NA
TOC/DOC	415.1	15%	85%	115%
TDS	160.1	20%	80%	120%
TSS	160.2	20%	80%	120%
Turbidity	180.1	20%	NA	NA
Nutrients				
NH3-N	350.2; 350.3	20%	80%	120%
NO3-N	300.0	20%	80%	120%
NO2-N	300.0	20%	80%	120%
NO3/NO2-N	353.2	20%	80%	120%
P	365.2	20%	80%	120%
Ortho-P	365.2; 365.3	20%	80%	120%
TKN	351.3	20%	80%	120%
Metals				
Ag	272.2; 200.8	20%	75%	125%
Al	200.9; 200.8	20%	75%	125%
Cd	213.2; 200.8	20%	75%	125%
Cr	218.2; 200.8	20%	75%	125%
Cu	220.2; 200.8	20%	75%	125%
Ni	249.2; 200.8	20%	75%	125%
Pb	239.2; 200.8	20%	75%	125%
Zn	289.2; 200.8	20%	75%	125%
As	206.3; 200.8	20%	75%	125%
Fe	200.9; SM 3500-Fe B	20%	75%	125%
Se	200.9; 270.3; 200.8	20%	75%	125%
Hg	1631	21%	79%	121%
Total Petroleum Hydrocarbons				
TPH (gasoline)	8015b	21%	45%	129%
TPH (diesel)		21%	45%	129%
TPH (motor oil)		21%	45%	129%
Oil & Grease	1664	18%	79%	114%
Pesticides and Herbicides				
Glyphosate	547	30%	70%	130%
OP Pesticides (esp. diazinon and chlorpyrifos)	8141; ELISA	25%	see method for constituent specific	
OC Pesticides	8081	25%		
Chlorinated Herbicides	8150; 8151	25%		
Carbamate Pesticides	8321	25%		
Miscellaneous Organic Constituents				
Base/Neutrals and Acids	625; 8270	30% to 50% (analyte dependent)	see method for constituent specific	
PAHs	8310			
Purgeables	624; 8260	20%		
Purgeable Halocarbons	601	30%	see method, Table 2	
Purgeable Aromatics	602	20%	see method for constituent specific	
Miscellaneous Constituents				
Cyanide	335.2	20%	75	125
Bacteriological				
Fecal Coliform	SM 9221E	-	-	-
Total Coliform	SM 9221B	-	-	-

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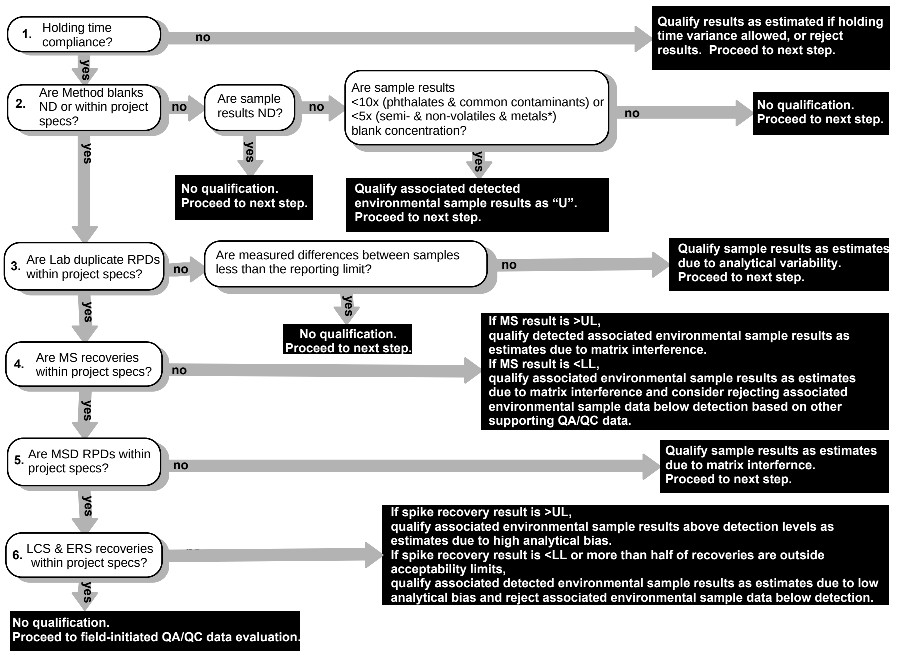
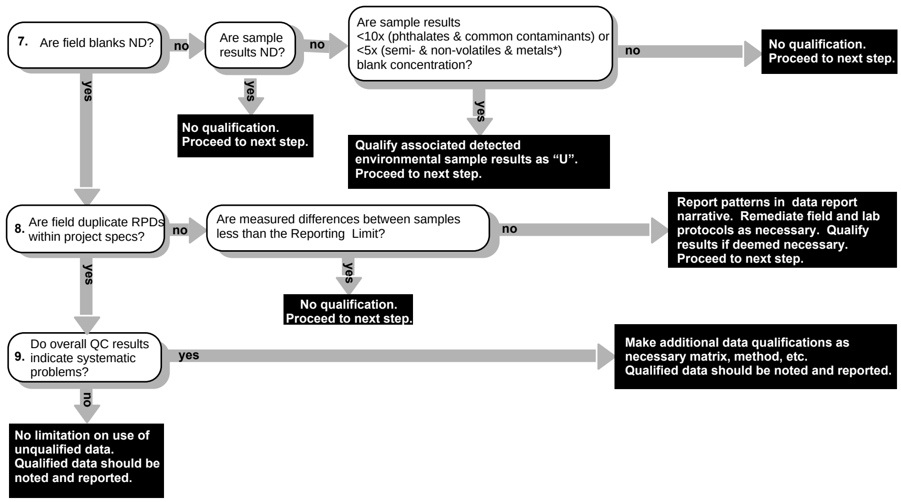


*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-1. Technical Data Evaluation for Lab-Initiated QA/QC Samples



*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-2. Technical Data Evaluation for Field-Initiated QA/QC Samples

Attachment E

Stormwater Outfall Selection

E-1 STORMWATER OUTFALL SITE SELECTION

The primary criterion cited in the MRP for selection of monitoring sites for the stormwater outfall monitoring program is that the sites are representative of the range of land uses in the area. An additional stated criterion for site selection is the ability to accurately measure flows for pollutant loads characterization. Flow measurement is easily addressed by physical assessment of the site conditions and consideration of access to the site. The primary criterion in the MRP implies an assessment of variation of land uses within the WMA, potential variation in water quality issues for different HUC-12 drainages, and geographic variation in factors influencing runoff quality.

In addition to the primary criteria for monitoring site selection, the Permit defined specific objectives depend on the representativeness of the stormwater outfall monitoring are as follows:.

- Determine the quality of discharge relative to municipal action levels
- Determine whether the discharge is in compliance with WQBELs derived from TMDL WLAs
- Determine whether a discharge causes or contributes to exceedances of receiving water limitations (RWL).

The default approach in the MRP to achieving adequate representation is to select one major outfall in each hydrological unit (HUC–12) within each individual Permittee's jurisdiction. Consequently, the minimum number of outfalls required for monitoring under the default approach is equal to the total number of unique combinations of HUC-12s and jurisdictions. The default approach is geared toward ensuring adequate accountability and representation if the Permittees monitor as individual entities, but results in monitoring more outfall discharges than needed for efforts coordinated among the ESGV Group. For the East San Gabriel Valley WMA, there would be 9 (or possibly 10) stormwater outfalls using the default approach.

The default approach would also result in several areas of relatively small and isolated HUC–12-Jurisdictional overlap for the Group Members. In some cases, these areas are predominately open space or undeveloped area. These areas are essentially an artifact of the default approach and would not provide significant additional characterization of runoff. Specific examples include:

- There is a very small overlap of the Pomona jurisdiction with the Dalton Wash HUC–12 (~78 acres).
- There is a small overlap of the La Verne jurisdiction with the Upper San Jose Creek HUC-12 (~145 acres).
- There is a small overlap of the north La Verne jurisdiction with an HUC–12 (~400 acres of mainly residential area plus substantially more open space).

- There is a small overlap of the south San Dimas jurisdiction with the Upper San Jose HUC-12 (~260 acres of mainly residential area plus substantially more open space).

As an alternative to the MRP's default monitoring approach, the Group Members is proposing to monitor one major outfall for each HUC12 in the WMA. The monitoring sites would consist of two outfalls with drains collecting runoff from two jurisdictions in the northern portion of the WMA, and one outfall in the southern portion of the WMA. The resulting data would be considered representative of all Group Members' discharge in the HUC–12s, would provide representative results needed to meet all three specific monitoring objectives, and would also provide the basis for stormwater management decisions for all Group Members. The rationale supporting the Group Members' alternative approach follows.

E-2 Representativeness of Selected Outfalls

The principal criterion for the site selection for stormwater outfall monitoring is that sites are representative of the range of land uses in the WMA. The drainages within the Group Members' WMA are comprised primarily of residential, commercial, and industrial land uses, with minimal percentages of agriculture and undeveloped open space. The three proposed outfalls were selected specifically to characterize runoff from drainages that are representative of the mix of these primary land uses in the WMA, and to minimize contributions from other land uses. Land use summaries for the ESGV Group are listed in **Table E-1**.

- Residential land use represents 64–84% of the monitored drainages.
- Commercial and Industrial land use represent 10–30% of the monitored drainages.
- Non-urban influences on runoff are minimized: Agriculture represents <1%, and open space represents <3% of the monitored drainages.

The monitored outfalls and drainages are geographically distributed in the WMA, and runoff from all 3 HUC–12s with significant urban drainage is characterized (Big Dalton Wash, Upper San Jose Creek, Upper Chino Creek), as well as runoff from each of the four jurisdictions (Claremont, Pomona, San Dimas, La Verne). The monitored drainages also represent a range of drainage sizes (0.19 – 1.3 square miles) and would directly characterize approximately 3.9% of the total WMP drainage area.

Table E-1.
Land Use Summary, areas in square miles and percent of drainage

Monitored Drainage	Units	Residential	Commercial / Industrial	Agriculture	Open Space	Other (not applicable)	TOTAL	Percent of Total WMP Area (61.3 sq.miles)
MTD 766	sq.miles	0.159	0.019	0.001	0.0	0.011	0.19	
	% drainage	84%	10%	0.6%	0.0%	5.7%	100%	*0.31%*
San Antonio Drain	sq.miles	0.834	0.386	0.0	0.021	0.058	1.30	
	% drainage	64%	30%	0.0%	1.6%	4.4%	100%	*2.1%*
BI 0566	sq.miles	0.722	0.129	0.0	0.022	0.004	0.877	
	% drainage	82%	15%	0.0%	2.5%	0.4%	100%	*1.4%*
								3.9%

E-3 Stormwater Monitoring Data Variability

The inter-event variability (e.g., for different storm events) in stormwater discharge quality is much greater than between individual outfall drainages or major land uses. Based on stormwater monitoring results from other programs, discharge quality from drainages with similar mixed land uses is not substantially different, and it will be impossible to distinguish statistically between drainages with a reasonable amount of monitoring because of the high variability in discharge quality for each site. The statistical power analysis based on the range of typical stormwater discharge quality distributions and the number of sample collected for the permit term, 15 samples per site, is enumerated in **Table E-2**. For example, the analysis results in an average difference between sites would need to be greater than 62% to be detected with 95% confidence and 80% power for a pollutant with a fairly "typical" coefficient of variance (COV) of 0.66. COVs for stormwater discharge quality are generally greater than 0.2 and commonly exceed 1.0. Programmatically meaningful differences (i.e., differences between sites as small as 20%) would not be expected to be detected for most constituents over the time frame of the permit.

Given the high variability typical of stormwater pollutant levels, and with only a few storm events that can be collected per year, it will not be possible to make meaningful distinctions between drainages, either within land use types, across land use types, or between jurisdictions. Management implementation by the Permittees is also expected to be relatively consistent

throughout the WMA, so additional focus on geographic differences is not necessary. This means that only a handful of sites are needed to adequately characterize residential land use discharge quality within the WMA. Consequently, sampling more than a few representative sites is unlikely to significantly improve characterization of runoff quality, or to better inform the Group Memberss's management decisions.

Realistically achievable changes in stormwater runoff quality or loads (e.g., 20–50% reductions) are statistically demonstrable only over relatively long periods of time (≥10 years). This is also due to the high variability between events and the relatively few number of events that can be sampled each season, and additional monitoring sites will do little to improve the statistical power of such trend analysis within the permit time frame compared to longer periods of evaluation. This also supports the need to assess management effectiveness and compliance based primarily on successful implementation actions rather than explicit demonstration of improvements in runoff quality.

E-3.1 Recommendation for Stormwater Outfall Site Selection

Based on the evaluations above, the Group Members's proposed CIMP approach to monitor one outfall for each HUC–12 in the WMA will provide the representative data needed to meet the specific permit objectives for stormwater outfall monitoring and support management decisions of the Group Members. Additional monitoring sites within these three HUC–12s will not provide significant improvements in representation or characterization of discharge quality, or additional information for discharge quality management.

Table E-2.
Detectible Significant Percent Differences between Sites

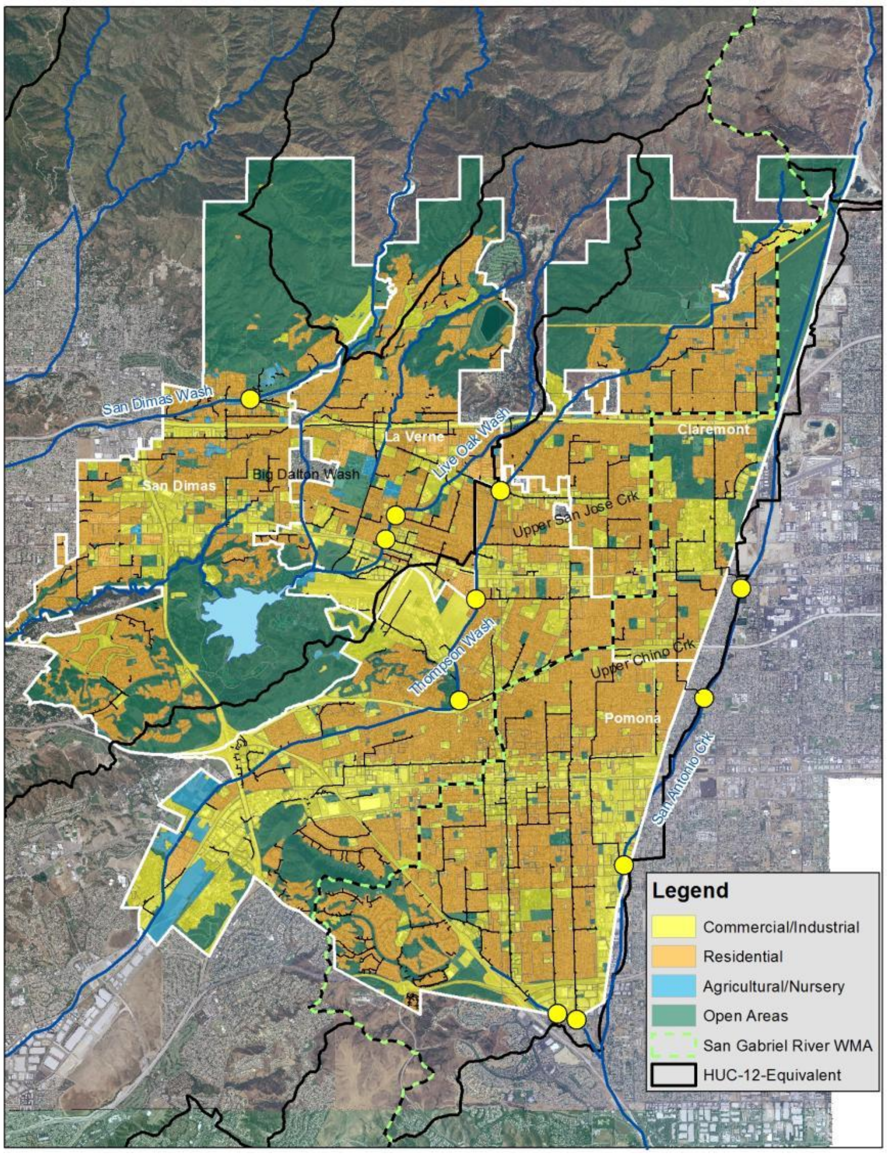
Sample Size = 15, alpha = 0.05		
COV	**power=0.8**	**power 0.9**
0.20	21%	24%
0.31	32%	36%
0.42	42%	48%
0.53	52%	59%
0.66	62%	70%
0.80	71%	81%
0.95	80%	91%
1.12	89%	100%
1.31	97%	109%

Attachment F

Alternate Stormwater Outfall Sites

There are three major HUC-12 Equivalents that cover the jurisdictions of the ESGV WMP Group. Presented below, are potential wet weather outfall monitoring sites by HUC-12 Equivalent as shown in the figure. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites are provided in this section. While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety issues under storm conditions. The potential stormwater outfalls are displayed in **Figure F-1**.

Figure F-1.
Potential Stormwater Outfalls



Three potential outfalls considered for wet weather monitoring in the Big Dalton Wash HUC-12 Equivalent are presented in **Table F-1**

Table F-.

Table F-1.
Potential Wet Weather Outfall Monitoring Sites – Big Dalton Wash HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Big Dalton Wash	La Verne	BI 9701 Line A	49”	Square or Rectangle	Reinforced Conc. Box	34.10429	-117.77243
Big Dalton Wash	San Dimas	MTD 766	42”	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Big Dalton Wash	La Verne	BI 0449 La Verne	54”	Square or Rectangle	Reinforced Conc. Box	34.10020	-117.77453

Three potential outfalls considered for wet weather monitoring in the Upper San Jose Creek HUC-12 Equivalent are presented in **Table F-2**.

Table F-2.
Potential Wet Weather Outfall Monitoring Sites – Upper San Jose Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper San Jose Crk	Pomona	BI 0266	93”	Round	Reinforced Conc. Pipe	34.07278	-117.75952
Upper San Jose Crk	Pomona	BI 0520 Line A	107”	Square or Rectangle	Reinforced Conc. Box	34.10831	-117.75105
Upper San Jose Crk	Pomona	RDD 0086 Thompson Crk	48”	Round	Reinforced Conc. Pipe	34.08998	-117.75595

Five potential outfalls considered for wet weather monitoring in the Upper Chino Creek HUC-12 Equivalent are presented in **Table F-3**.

Table F-3.
Potential Wet Weather Outfall Monitoring Sites – Upper Chino Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper Chino Crk	Pomona	BI 0267	63”	Square or Rectangle	Reinforced Conc. Box	34.04466	-117.72593
Upper Chino Crk	Pomona	San Antonio Drain Unit 1	108”	Square or Rectangle	Reinforced Conc. Box	34.01836	-117.73567
Upper Chino Crk	Pomona	BI 6402 Unit 1 Line C	81”	Round	Reinforced Conc. Pipe	34.01948	-117.73962
Upper Chino Crk	Claremont	BI 1122	87”	Round	Reinforced Conc. Pipe	34.09178	-117.70173
Upper Chino Crk	Claremont	BI 0022 Line C	90”	Round	Reinforced Conc. Pipe	34.07312	-117.70945

October 27, 2014

East San Gabriel Valley Watershed
Management Group
(See Distribution List)

REVIEW OF THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP'S DRAFT WATERSHED MANAGEMENT PROGRAM, PURSUANT TO PART VI.C OF THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear East San Gabriel Valley Watershed Management Group:

The Regional Water Board has reviewed the draft WMP that the East San Gabriel Valley Watershed Management Group (ESGV WMG) submitted on June 27, 2014 for the East San Gabriel Valley Watershed Management Area. The participants of the ESGV WMG are the Cities of Claremont, La Verne, Pomona and San Dimas (the ESGV Cities). This program was submitted pursuant to the provisions of NPDES Permit No. CAS004001 (Order No. R4-2012-0175), which authorizes discharges from the municipal separate storm sewer system (MS4) operated by 86 municipal Permittees within Los Angeles County (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and may be developed individually or collaboratively

The purpose of a WMP or EWMP is for a Permittee to develop and implement a comprehensive and customized program to control pollutants in MS4 discharges of stormwater and non-stormwater to address the highest water quality priorities. These include complying with the required water quality outcomes of Part V.A (Receiving Water Limitations) and Part VI.E and Attachments L through R (Total Maximum Daily Load (TMDL) Provisions) of the LA County MS4 Permit. If a Permittee opts to develop a WMP or EWMP, the WMP or EWMP must meet the requirements, including conducting a Reasonable Assurance Analysis (RAA), of Part VI.C (Watershed Management Programs) of the LA County Permit and must be approved by the Regional Water Board.

As stated above, on June 27, 2014, the ESGV WMG submitted a draft Watershed Management Program (WMP) for the East San Gabriel Valley Watershed Management Area (WMA) to the Regional Water Board pursuant to Part VI.C.4.c of the LA County MS4 Permit.

The Regional Water Board has reviewed the draft WMP and has determined that, for the most part, the draft WMP includes the elements and analysis required in Part VI.C of LA County MS4

Permit. However, some revisions to the ESGV Cities' draft WMP are necessary. The Regional Water Board's comments on the draft WMP, including detailed information concerning necessary revisions to the draft WMP, are found in Enclosure 1 and Enclosure 2, respectively. The specific Permit provisions cited in the enclosures refer to provisions in the LA County MS4 Permit. The LA County MS4 Permit includes a process through which revisions to the draft WMP can be addressed (Part VI.C.4 in the LA County MS4 Permit). The process requires that a final WMP, revised to address Regional Water Board comments, must be submitted to the Regional Water Board not later than three months after comments are received by the Permittees on the draft program.

Please make the necessary revisions to the draft WMP as identified in the enclosures to this letter and submit the revised WMP as soon as possible and no later than January 27, 2015.

The revised WMP must be submitted to losangeles@waterboards.ca.gov with the subject line "LA County MS4 Permit – Revised Draft East SGV WMP" with a copy to Ivar.Ridgeway@waterboards.ca.gov.

If the necessary revisions are not made, the ESGV Cities will be subject to the baseline requirements in Part VI.D of the Order and shall demonstrate compliance with receiving water limitations pursuant to Part V.A and with applicable interim and final water quality-based effluent limitations (WQBELs) in Part VI.E and Attachment Q pursuant to subparts VI.E.2.d.i.(1)-(3) and VI.E.2.e.i.(1)-(3), respectively.

Until the draft East SGV WMP is approved, the Cities are required to:

(a) Continue to implement all watershed control measures in its existing storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40, Code of Federal Regulations, section 122.26(d)(2)(iv);
(b) Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act section 402(p)(3)(B)(ii);
(c) Target implementation of watershed control measures in (a) and (b) above to address known contributions of pollutants from MS4 discharges to receiving waters; and
(d) Implement watershed control measures, where possible from existing TMDL implementation plans, to ensure that MS4 discharges achieve compliance with interim and final trash water quality-based effluent limits (WQBELs) and all other WQBELs and receiving water limitations by the applicable compliance deadlines occurring prior to approval of a WMP.

In addition on June 27, 2014, the East San Gabriel Valley River Watershed Management Group submitted a draft Coordinated Integrated Monitoring Program (CIMP) for the East San Gabriel WMA to the Regional Water Board pursuant to Part IV.C of Attachment E of the LA County MS4 Permit. The Regional Water Board review and comments on the draft CIMP will be provided under separate cover.

If you have any questions, please contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Chief Deputy E.O.
for
Samuel Unger, P.E.
Executive Officer

Enclosures:

Attachment 1 Comments and Necessary Revisions to Draft WMP
Attachment 2 Comments on Reasonable Assurance Analysis for the East San Gabriel Valley Watershed Management Group

cc: Bronwyn Kelley, PG, Project Manager MWH

Los Angeles Regional Water Quality Control Board

Attachment to October 27, 2014 Letter Regarding the East San Gabriel Valley Watershed Management Group's Draft Watershed Management Program (WMP) Submittal Pursuant to Part VI.C of the LA County MS4 Permit (Order No. R4-2012-0175)

Comments and Necessary Revisions to Draft WMP

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.a.ii. Waterbody-Pollutant Classification (page 59)	• Greater detail on the water quality characterization, including (1) a map of the locations of the monitoring sites for each of the four sources of data identified on page 7 relative to the watershed management area, and (2) a tabular summary of the data should be provided. • In Section 5.1.4, the data used to establish existing concentrations should be described in more detail and presented in tabular form. Additionally, Table 5-2 appears to omit from the analysis San Jose Creek. Discharges to San Jose Creek are subject to a dry-weather water quality-based effluent limitation (WQBEL) for selenium; therefore, data on existing concentration should be included for San Jose Creek. • The MS4 permit requires WMPs to include the applicable WQBELs for every approved TMDL within the WMA. The draft WMP does not include the WQBELs for Puddingstone Reservoir for total phosphorus and total nitrogen, total mercury, and PCBs, chlordane, dieldrin, total DDT and 4,4-DDT. • The WMP needs to address all applicable WQBELs to comply with provisions of Part VI.E and Attachment P related to the Los Angeles Lakes TMDLs (specifically, Puddingstone Reservoir for nitrogen, phosphorus, mercury, PCBs, chlordane, dieldrin and DDT compounds). Attachment P identifies wasteload allocations for each of the four municipalities in the ESGV WMG and states these are to be measured at the point of discharge into the receiving waters. Also, if implementation will take more than one year, then interim milestones and dates for their achievement must also be included. • The WMP needs to specify the applicable receiving water limitations for Category 3 waterbody-pollutant combinations (WBPCs).
Part VI.C.5.a.iv. Prioritization (page 60)	• The WMP needs to provide a clear schedule that demonstrates implementation of the BMPs will achieve the required interim metal reductions by the compliance deadlines. Whereas Tables 5-6 through 5-9 present the type of structural BMPs to be implemented by each City, there are no specific dates for installation; the WMP schedule should describe timelines through 2022.

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.b. Selection of Watershed Control Measures (pages 61-64)	• The WMP proposes to increase frequency of construction site inspections although this appears to apply only for City of San Dimas. The WMP should either increase such frequency for other Cities or provide rationale for no changes for the other cities of the ESGV WMG. The WMP also proposes to require inventory of existing developments for future BMP retrofits; however no timeframe is included. • The draft RAA addresses WBPCs for the San Gabriel Metals TMDLs; however the RAA does not address activities and control measures to address selenium in San Jose Creek Reach 2, nor pollutants in the Puddingstone Reservoir TMDLs. Greater clarity should be provided on the volume based approach taken by the ESGV WMG. • Activities and control measures for Category 3 WBPCs for Walnut Creek Wash and San Gabriel River Reach 2 and Reach 3 are not included. To the extent that the group intends to address these through the volume based approach, this should be more clearly stated in the WMP. • The RAA identifies potential areas for green street conversion and assumes a 30% conversion of the road length in the suitable areas; however, the specific locations and projects are not identified. Although it may not be possible to provide detailed information on specific projects at this time, the WMP should at least specify the number of projects needed to ensure timely compliance with permit requirements. • The draft WMP assumes a 10% pollutant reduction from new non-structural controls. Although 10% is a modest fraction of the overall controls necessary, additional support for this assumption should be provided, or as part of the adaptive management process, the Permittees could commit to evaluate this assumption during program implementation and develop alternate controls if it becomes apparent that the assumption is not warranted. •

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.b.iv.(5) Reasonable Assurance Analysis (pages 63-64)	• The draft WMP, including the RAA, excludes stormwater runoff from "non-MS4" facilities within the WMA from the stormwater treatment target. In particular, industrial facilities that are permitted by the Water Boards under the Industrial General Permit or an individual stormwater permit were identified and subtracted from the treatment target. Regional Water Board staff recognizes that this was done with the assumption that these industrial facilities will retain their runoff and/or eliminate their cause/contribution to receiving water exceedances, as required by their respective NPDES permit. However, it is important that the Group's actions under its Industrial/Commercial Facilities Program—including tracking critical industrial sources, educating industrial facilities regarding BMP requirements, and inspecting industrial facilities—ensure that all industrial facilities are implementing BMPs as required. • The draft WMP, including the RAA, takes a similar approach for areas under the jurisdiction of the California Department of Transportation (Caltrans). Caltrans facilities that are permitted under the Caltrans MS4 permit (Order No. 2012-0011-DWQ) were also identified and subtracted from the treatment target. It should be noted that the Amendment to the Caltrans Permit (Order WQ 2014-0077-DWQ) includes provisions to address TMDL requirements throughout the state. Revisions to Attachment IV of the Caltrans Permit require that Caltrans prioritize all TMDLs for implementation of source control measures and BMPs, with prioritization being "consistent with the final TMDL deadlines to the extent feasible." Additionally, the Caltrans Permit also includes provisions for collaborative implementation through Cooperative Implementation Agreements between Caltrans and other responsible entities to conduct work to comply with a TMDL. By contributing funds to Cooperative Implementation Agreements and/or the Cooperative Implementation Grant Program, Caltrans may receive credit for compliance units, which are needed for compliance under the Caltrans Permit. In a similar manner, the LA County MS4 Permit includes provisions for Permittees to control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other MS4 owners—such as Caltrans—to successfully implement the provisions of the Order (see Parts VI.A.2.a.viii and VI.A.4.a.iii). Therefore, the Group should ensure that it is closely

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
	coordinating with appropriate Caltrans District staff regarding the identification and implementation of watershed control measures to achieve water quality requirements (i.e. applicable Receiving Water Limitations and WQBELs).

Los Angeles Regional Water Quality Control Board

TO: East San Gabriel Valley Watershed Management Group
(See Distribution List)

FROM: C.P. Lai, Ph.D., P.E. and Thanhloan Nguyen
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

DATE: October 24, 2014

SUBJECT: COMMENTS ON SECTION 5, REASONABLE ASSURANCE ANALYSIS AND WATERSHED CONTROL MEASURES OF THE DRAFT WATERSHED MANAGEMENT PROGRAM FOR THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT AREA

This memorandum contains comments on Section 5, Reasonable Assurance Analysis of the draft Watershed Management Program (WMP), dated June 27 2014, which was submitted by the East San Gabriel Valley Watershed Management Group.

A. General comments on the draft Reasonable Assurance Analysis (RAA) section of the Watershed Management Program.

The required reductions for dry weather were calculated based on the median and the 90th percentile existing concentrations in Section 5.1.4 of the WMP. Specific required reductions for Thompson Creek, San Dimas, and Puddingstone Reservoir were listed in Table 5-2 on page 42 of the draft WMP. However, the required reductions for dry weather for San Jose Creek were not included in the table. The WMP should be revised to include the required reductions for identified priority pollutants for San Jose Creek.

B. Modeling comments regarding analysis of runoff volumes based on the 85th percentile, 24-hour design storm:

1. The predicted runoff volumes presented in Figure 5-12 and Table 5-1 should be presented and explained in more detail to provide clarity on how those values were obtained from the hourly model output results of runoff volume over the 24-hour design event for each subwatershed or city-subwatershed.

2. The report did not describe how the model was calibrated, including calibration results compared to calibration criteria in Table 3.0 of the RAA Guidelines, and no historical hydrology data were used for comparison with the model results for the baseline prediction. According to Part G, pages 12-13 of the RAA Guidelines, model calibration is necessary to ensure that the model can properly assess all the variables and conditions in a watershed system. The hydrology calibration is particularly important in the case of the East San Gabriel Valley RAA, since the group is used a volume-based approach.

3. The report presents the existing runoff volumes and required volume reductions to achieve the 85th percentile, 24-hour volume retention standard for each watershed area. The report needs to present the same information, if available, for non-stormwater runoff. Alternatively, the report should include a commitment to collect the necessary data in each watershed area, through the non-stormwater outfall screening and monitoring program, so that the model can be re-calibrated during the adaptive management process to better characterize non-stormwater flow volumes and to demonstrate that proposed volume retention BMPs will capture 100 percent of non-stormwater that would otherwise be discharged through the MS4 in each watershed area.

4. The index of subwatersheds shown in Figure 5-15 does not match that used in the model input file. The ID numbers for 67 subwatersheds from the model input file (and the correspondence of these 67 subwatersheds to the 98 city-subwatersheds) must be provided and be shown in the simulation domain to present the geographic relationship of these subwatersheds and city-subwatersheds that are simulated in the LSPC model.

5. In the analysis of the required reduction for lead, zinc, selenium and E. coli under the dry weather condition, more detailed information about the baseline condition for 50th and 90th percentile existing concentration presented in Table 5-2 should be provided.

November 20, 2014

East San Gabriel Valley Watershed Management Group
(See Distribution List)

REVIEW OF THE EAST SAN GABRIEL VALLEY GROUP'S COORDINATED INTEGRATED MONITORING PROGRAM, PURSUANT TO PART VI.B AND ATTACHMENT E, PART IV.B OF THE LOS ANGELES COUNTY M UNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear East San Gabriel Valley Watershed Management Group:

The Regional Water Board has reviewed the Coordinated Integrated Monitoring Program submitted on June 27, 2014 by the East San Gabriel Valley Watershed Management Group (the Group). This program was submitted pursuant to the provisions of NPDES Permit No. CAS004001 (Order No. R4-2012-0175), which authorizes discharges from the municipal separate storm sewer system (MS4) operated by 86 municipal Permittees within Los Angeles County (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop and implement, in coordination with an approved Watershed Management Program per Part VI.C, a customized monitoring program that achieves the five Primary Objectives set forth in Part II.A of Attachment E and includes the elements set forth in Part II.E of Attachment E. Customized monitoring programs may be developed on an individual jurisdictional basis, referred to as an Integrated Monitoring Program (IMP), or a on watershed basis, referred to as a Coordinated Integrated Monitoring Program (CIMP). These programs must be approved by the Executive Officer of the Regional Water Board.

The Regional Water Board has reviewed the Group's CIMP and has determined that, for the most part, the CIMP includes the elements set forth in Part II.E and will achieve the Primary Objectives set forth in Part II.A of Attachment E of the LA County MS4 Permit. However, some additions and revisions to the Group's CIMP are necessary. The Regional Water Board's comments on the CIMP, including detailed information concerning necessary additions and revisions to the CIMP, are found in Enclosure 1 and Enclosure 2.

Please make the necessary additions and revisions to the CIMP as identified in the enclosures to this letter and submit the revised CIMP as soon as possible and no later than **February 18, 2015**. The revised CIMP must be submitted to losangeles@waterboards.ca.gov with the subject line "LA County MS4 Permit – Revised East SG Valley Coordinated Integrated Monitoring Program" with a copy to Ivar.Ridgeway@waterboards.ca.gov.

Upon approval of the revised CIMP by the Executive Officer, the Group must prepare to commence its monitoring program within 90 days. If the necessary revisions are not made, the

Group must comply with the Monitoring and Reporting Program (MRP) and future revisions thereto, in Attachment E of the LA County MS4 Permit.

Until the Group's CIMP is approved by the Executive Officer, the monitoring requirements pursuant to Order No. 01-182 and Monitoring and Reporting Program CI 6948, and pursuant to approved TMDL monitoring plans shall remain in effect for the Cities of Claremont, La Verne, Pomona and San Dimas.

If you have any questions, please contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures:

Enclosure 1 – Summary of Comments and Necessary Revisions to CIMP
Enclosure 2 – Comments on Aquatic Toxicity Monitoring
East San Gabriel Valley Watershed Management Group Distribution List

cc: Bronwyn Kelley, PG, Project Manager MWH

ENCLOSURE 1
SUMMARY OF COMMENTS AND NECESSARY REVISIONS TO CIMP
EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP

CIMP Reference	MRP Element/ Reference (Attachment E)	Comment and Necessary Revision
Section 1	Table 1-4	The revised CIMP should be updated with description of the SGR Metals TML Implementation Plan adopted by the Regional Water Board, which became effective on October 13, 2014. See http://63.199.216.6/larwqcb_new/bpa/docs/R13-004/R13-004_RB_BPA.pdf
Section 2	TMDL Monitoring	The CIMP appropriately includes coordination with other parties regarding monitoring of other impaired waterbodies, including in Puddingstone Reservoir and at the mouth of the San Gabriel River as required by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbor Toxics TMDL). For Pomona and Claremont, the CIMP appropriately references monitoring in the Middle Santa Ana River, as required by the Middle Santa Ana River Bacterial Indicator TMDL, and provides links in Attachment A to both cities' Comprehensive Bacteria Reduction Plans developed pursuant to this TMDL.
Section 2 Table 2-1	Frequency of sampling; Aquatic Toxicity	Table 2-1 presents the proposed monitoring parameters and frequency of sampling during wet/dry weather events. For San Jose Creek Reach 2, the wet weather monitoring for metals should be increased to 4x/year to be consistent with SGR metals TMDL. Reach 2 is considered a tributary to the downstream impaired Reach 1. Wet-weather monitoring results from the first year may be evaluated to determine whether reducing the frequency to 3x/year would still provide sufficient data. The ESGV WMG may request a reduction in frequency on the basis of this data evaluation. For Live Oak Wash, the wet-weather monitoring for organochlorine compounds should be increased to 3x/year. Dry weather monitoring for nutrients should be included at a frequency of 2x/year. Live Oak Wash is considered an input to Puddingstone Reservoir. Aquatic toxicity monitoring in the receiving water is required two times per year during wet weather conditions and once per year during dry weather conditions. This applies to San Jose Creek Reach 2, San Dimas Wash and Walnut Creek Wash. See Enclosure 2 for more detailed comments on aquatic toxicity monitoring. (See Attachment E, Parts VI.C.1.d.vi and VI.D.1.c.vi.)
Section 3	MS4 Database	We appreciate the WMG providing GIS files as part of the draft submittal. Section 3.2 states that information on dry weather diversions was included in database; however, we did not find a map in the draft submittal. The revised CIMP should include a map of the stormwater outfall dry weather diversions, if they exist. If not, then please explain. Updated GIS files should be included in the revised

CIMP Reference	MRP Element/ Reference (Attachment E)	Comment and Necessary Revision
		submittal, if necessary.
Section 4 Table 4-6	Outfall-based Stormwater Monitoring	The table should be modified to show monitoring of parameters identified for the San Dimas Wash stormwater outfall site will occur three times per year.
Section 4	Representative-ness of outfall site	Table 4-2 shows the land uses associated with each HUC-12 subwatershed. We note there are some slight differences between the residential land use percentages of stormwater outfall sites, which show a higher portion of residential land use than the HUC-12 distribution. The overall land us distributions within the Big Dalton Wash and Upper San Jose Creek HUC-12 area, in particular, have significantly more Commercial/Industrial land use than the corresponding outfall drainages. While this may be acceptable, additional support for the representativeness of the two outfall locations relative to their larger HUC-12 areas should be included in the revised CIMP.
Section 5.2	Non-stormwater outfall screening	The revised CIMP needs to clarify the initial screening process by providing more detail on the three initial screenings (time between each screening, including assurance that potential seasonality in non-stormwater discharges is captured by the initial three screenings) and providing clarity regarding whether a fourth screening would occur for outfalls where dry weather flow is considered to be significant. Table 5-2 in the revised CIMP should more clearly define how the Permittees will determine what constitutes a "significant non-stormwater discharge" pursuant to Attachment E, Part IX.C.1.a-e.
Section 9	Wet Weather and dry weather Monitoring	The CIMP defines wet weather incorrectly as the period between October 1 and April 15. Instead, wet weather should be defined consistent with the SGR Metals and Selenium TMDL, i.e., when the maximum daily flow in Reach 2 of the SGR is greater than or equal to 260 cfs. Similarly the CIMP should include definition of dry weather and be consistent with the approved TMDLs.
Section 12	CIMP schedule	The implementation schedule (pg. 70) should be modified to identify which receiving water and outfall sites will be projected to be installed within this permit term. The Regional Water Board supports early installation of the LTA receiving water site. Regarding the installation of other sites, the installation of sites to assess compliance with the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL should occur in time to conduct monitoring prior to the first interim compliance deadlines for wet and dry weather of September 2017.

ENCLOSURE 2
COMMENTS ON AQUATIC TOXICITY TESTING
EAST SAN GABRIEL VALLEY CIMP

Part XII.G.1. (Page E-30) and Part XII.G.2. (Page E-30) of the Monitoring and Reporting Program states that Permittees shall conduct aquatic toxicity monitoring utilizing the critical life stage chronic toxicity test methods listed. The draft CIMP does not propose use of critical life stage chronic toxicity test methods for assessment of toxicity in wet weather samples and instead proposes use of acute toxicity test methods. This is not acceptable; the appropriate chronic toxicity test method listed in the MRP must be used and both survival and sublethal endpoints must be reported. We suggest the group consult the State Water Resources Control Board 2011 publication, "Implementation Guidance: Toxicity Testing for Stormwater" to gain insight on how to run chronic toxicity tests on wet weather samples.

Part XII.I.1. (Page E-33) of the Monitoring and Reporting Program states that a toxicity test sample is immediately subject to TIE procedures if either survival or sublethal endpoints demonstrate a Percent Effect value equal to or greater than 50% at the Instream Waste Concentration. The draft CIMP does not propose to perform a TIE when at least a 50% sublethal effect is seen but instead proposes to first collect a confirmatory sample two weeks later.

This is not an acceptable approach. The CIMP seems to be implying that chronic toxicity has some inherent non-persistent quality to it that makes the results unreliable. It also implies that chronic toxicity is of lesser importance. Although it would be hard to generalize to all possible situations, the fact that a large number of invertebrates (or fish) living in a receiving water can survive an ambient pollutant concentration but are impacted in terms of growth or reproduction means that the population as a whole will be impacted, and could eventually collapse. Some species living in the receiving water have very short lifespans and during critical times of the year may be prey for other organisms that will in turn be impacted by their population decline.

Additionally, the toxicity flowcharts do not show the need to proceed to outfall toxicity testing should a TIE of a toxic receiving water sample be inconclusive and instead places focus on the response to non-persistent toxicity. While development of the proposed Discharge Assessment Plan (DAP) will be useful, it cannot take the place of the required outfall toxicity monitoring following an inconclusive TIE in the receiving water. And, while there may be situations where TIEs cannot be resolved due to non-persistent toxicity and no further action on that sample can be pursued, inconclusive TIEs often result from a lack of following well-defined procedures rather than non-persistent toxicity. As mentioned elsewhere in this comment letter, including pyrethroids in the TIE procedure will reduce the occurrence of inconclusive TIEs as will including chemical testing for Fipronil and its degradates for comparison to U.S. EPA benchmarks.

We strongly recommend a more cohesive approach whereby the Group would develop a Toxicity Assessment Plan analogous to the Discharge Assessment Plan currently proposed in the CIMP.

Suggested Special Study: The 2013 study released by the California Stormwater Quality Association (CASQA) entitled "Review of Pyrethroid, Fipronil and Toxicity Monitoring Data from California Urban Watersheds" reviewed stormwater data from studies conducted during 2005 - 2012 and highlighted the toxicity impacts from use of pesticides not currently required to be monitored for by the MRP. We suggest the group begin monitoring for these chemicals in the receiving water and, in addition, assess toxicity using the 2002 acute toxicity testing protocol (EPA-821-R-02-012) with the amphipod *Hyalella azteca* as the test organism. *Hyalella* is known to be much more sensitive to pyrethroids than is *Ceriodaphnia* while the latter is useful for its sensitivity to OP pesticides. The two species together may also prove to be more useful in detecting toxicity from fipronil. And, should 50% or greater effect be detected in the toxicity test, we suggest a procedure to incorporate pyrethroids into the subsequent TIE be documented (three possible treatments have been identified by researchers, see http://www.pubfacts.com/detail/20018342/Focused-toxicity-identification-evaluations-to-rapidly-identify-the-cause-of-toxicity-in-environment). While fipronil does not have a TIE procedure identified currently, chemical testing for the parameter (and degradates) and comparison to U.S. EPA Office of Pesticide Program's aquatic life benchmarks at http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm will aid in determining the cause(s) of toxicity in order to follow up with outfall testing of the parameter(s) with the ultimate goal of removing the source. This approach will also help minimize inconclusive TIE results which would lead to required toxicity testing in a representative upstream outfall.

EAST SAN GABRIEL VALLEY WATERSHED WMP

Name	City	Email Address
Latoya Cyrus	San Dimas	lcyrus@ci.san-dimas.ca.us
Loretta Mustafa	Claremont	lmustafa@ci.claremont.ca.us
Kathleen Trepa	Claremont	ktrepa@ci.claremont.ca.us
Brian Desatnik	Claremont	bdesatnik@ci.claremont.ca.us
Cari Sneed	Claremont	csneed@ci.claremont.ca.us
Lisa O'Brien	La Verne	lobrien@ci.la-verne.ca.us
Rafferty Wooldridge	La Verne	rwooldridge@ci.la-verne.ca.us
Julie Carver	Pomona	julie_carver@ci.pomona.ca.us
Meg McWade	Pomona	Meg_McWade@ci.pomona.ca.us

CITY OF LA VERNE
CITY HALL
3660 "D" Street, La Verne, California 91750

January 28, 2014

VIA Regional Website

Regional Water Quality Control Board
Los Angeles Region
Attention: Ivar K. Ridgeway, Senior Environmental Scientist
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Mr. Ridgeway,

The East San Gabriel Valley Watershed Management Group (ESGVWMG) comprises the Cities of Claremont, La Verne, Pomona, and San Dimas. Pursuant to the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit (NPDES Permit No. CAS004001; Order No. R4-2012-0175), ESGVWMG hereby submits the revised final Watershed Management Program (WMP) Plan.

The Group would like to re-emphasize that while it is committed to carrying out the components of the WMP and CIMP, funding for projects and monitoring will be an obstacle for our agencies until a long term solution is realized.

The ESGVWMG looks forward to working with Regional Board staff during the CIMP and WMP implementation and adaptive management process. If there are any questions, please contact the respective City Staff as listed below:

- Lisa O'Brien - City of La Verne at (909) 596-8741
- Loretta Mustafa – City of Claremont at (909) 399-5474
- Julie Carver – City of Pomona at (909) 620-3628
- Latoya Cyrus – City of San Dimas at (909) 394-6244

Sincerely,

L O'Brien

Lisa O'Brien
Management Analyst

Cc: Loretta Mustafa, City of Claremont
Julie Carver, City of Pomona
Latoya Cyrus, City of San Dimas

Attachments:
Table 1. Response to Comment Log
Final ESGVWMG Watershed Management Program (WMP) Plan

January 2015

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Final Watershed Management Program (WMP) Plan

Prepared by

East San Gabriel Valley Watershed Management Group
(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

Executive Summary

The Cities of Claremont, La Verne, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a Notice of Intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) for Los Angeles County (County), as adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective on December 28, 2012. This WMP is a requirement of the Permit and presents an approach for compliance with the Permit.

The level of effort and funding needed to implement the best management practices (BMPs) identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these required budget increases will not be possible.

IDENTIFICATION OF WATER QUALITY PRIORITIES

The water quality prioritization determines which pollutants are of concern for the waterbodies in the WMP area and the water body-pollutant combinations (WBPCs) which will be addressed within the Group's area. The Permit defines three categories of WBPCs to be used:

- **Category 1** are those subject to an established Total Maximum Daily Load (TMDL);
- **Category 2** are those on the 303(d) list or those that have sufficient exceedances to be listed; and
- **Category 3** for those with observed exceedances but too infrequent to be listed.

Subcategories of the WBPCs were identified to refine the prioritization process based on the frequency, timing, and magnitude of exceedances.

WATERSHED CONTROL MEASURES

The focus of the WMP is on the identification of sufficient amount and types of BMPs to meet receiving water and effluent limitations set forth in the Permit. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP selection is to reduce the impact of stormwater and non-stormwater on receiving water quality.

To support WMP development, a nomenclature for BMPs was established based on two main categories of structural BMPs: regional BMPs and distributed BMPs. Multiple regional and distributed BMPs were identified by the Group for consideration in the WMP. The Group will continue to implement minimum control measures (MCMs) as required by the Permit.

REASONABLE ASSURANCE ANALYSIS

The Reasonable Assurance Analysis (RAA) was conducted with the Watershed Management Modeling System (WMMS). The RAA is a key element of the WMP, used to provide confidence in the effectiveness of BMPs, and support BMP scheduling.

WMP compliance will be determined on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with receiving water limitations (RWLs) and water quality based effluent limitations (WQBELs) of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals. However, the cities are provided flexibility to modify the suite of BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the Coordinated Integrated Monitoring Program (CIMP), indicate that less extensive BMP implementation is needed to achieve Permit limitations.

To establish an initial scenario for BMP implementation to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the right-of-way (ROW), public parcels, and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) for new development and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs may be retained with regional BMPs.

Based on RAA modeling, the BMP capacity necessary to retain the 85th percentile design storm volume for the WMP area is approximately 544 acre-feet. During WMP implementation, ROW BMPs other than green streets may be selected, such as dry wells. As part of the adaptive management process, the capacity of non-ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

SCHEDULING OF CONTROL MEASURES

The San Gabriel River Metals TMDL is used as the primary schedule for BMP implementation for the ESGV Group. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. For the 10% milestone, a suite of control measures are identified that will be implemented by 2017 including non-structural BMPs, a Rooftop Runoff Reduction Program, and recently constructed and planned structural BMPs. Each of the control measures identified for the 10% milestone are enhanced compared to implementation levels that existed prior to the new Permit. Attainment of the design storm volumes to address the final limits of the San Gabriel River Metals TMDL will also address all other TMDLs in the WMP area.

ADAPTIVE MANAGEMENT PROCESS

The WMP is intended to be implemented as an adaptive program as new program elements are implemented and information is gathered over time. The WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to addressing changing conditions and maintaining effectiveness going forward. This process is repeated every two years following the final approval of the WMP.

IMPLEMENTATION PROCESS

With sufficient time, the BMP networks identified in the WMP could be implemented and the neighborhoods of the ESGV Group could be enhanced with green infrastructure to effectively manage stormwater. Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of BMP implementation. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP. The ultimate goal is appropriate protection of beneficial uses.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

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LIST OF ACRONYMS AND ABBREVATIONS

BMP	Best Management Practice
CALTRANS	California Department of Transportation
CEDEN	California Environmental Data Exchange Network
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
County	County of Los Angeles
CWH	Council for Watershed Health
ESCP	Erosion and Sediment Control Plan
ESGV	East San Gabriel Valley
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
Group	East San Gabriel Valley Watershed Management Group
IC/ID	Illicit Connection/Illicit Discharge
L-SWPPP	Local Stormwater Pollution Prevention Plan
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LID	Low Impact Development
LSPC	Loading Simulation Program in C++
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NIMS	Nonlinearity-Interval Mapping Scheme
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyl
Permit	Order No. R4-2012-0175, NPDES Permit No. CAS004001
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
ROW	Right-of-Way
RWL	Receiving Water Limitation
SUSMP	Standard Urban Stormwater Mitigation Program
SUSTAIN	System for Urban Stormwater Treatment and Analysis Integration
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCM	Watershed Control Measure
WMMS	Watershed Management Modeling System
WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQO	Water Quality Objectives

1 Introduction

1.1 BACKGROUND AND REGULATORY FRAMEWORK

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Order No. R4-2012-0175 (Permit) was adopted November 8, 2012 by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in Los Angeles County (County) are not causing or contributing to exceedances of water quality objectives (WQOs) set to protect the beneficial uses in the receiving waters in the Los Angeles region.

The Cities of La Verne, Claremont, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a notice of intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the Permit. This WMP complies with Part VI.C.5-C.8 of the Permit as listed below:

- (i) Prioritizes water quality issues resulting from storm water and non-storm water discharges from the MS4 to receiving waters within the Group's area;
- (ii) Identifies and implements strategies, control measures, and best management practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d of the Permit;
- (iii) Modifies strategies, control measures, and BMPs as necessary based on analysis of monitoring data to ensure that applicable water quality-based effluent limitations (WQBELs) and receiving water limitations (RWLs) and other milestones set forth in this WMP are achieved in the required timeframes;
- (iv) Provides appropriate opportunity for meaningful stakeholder input.

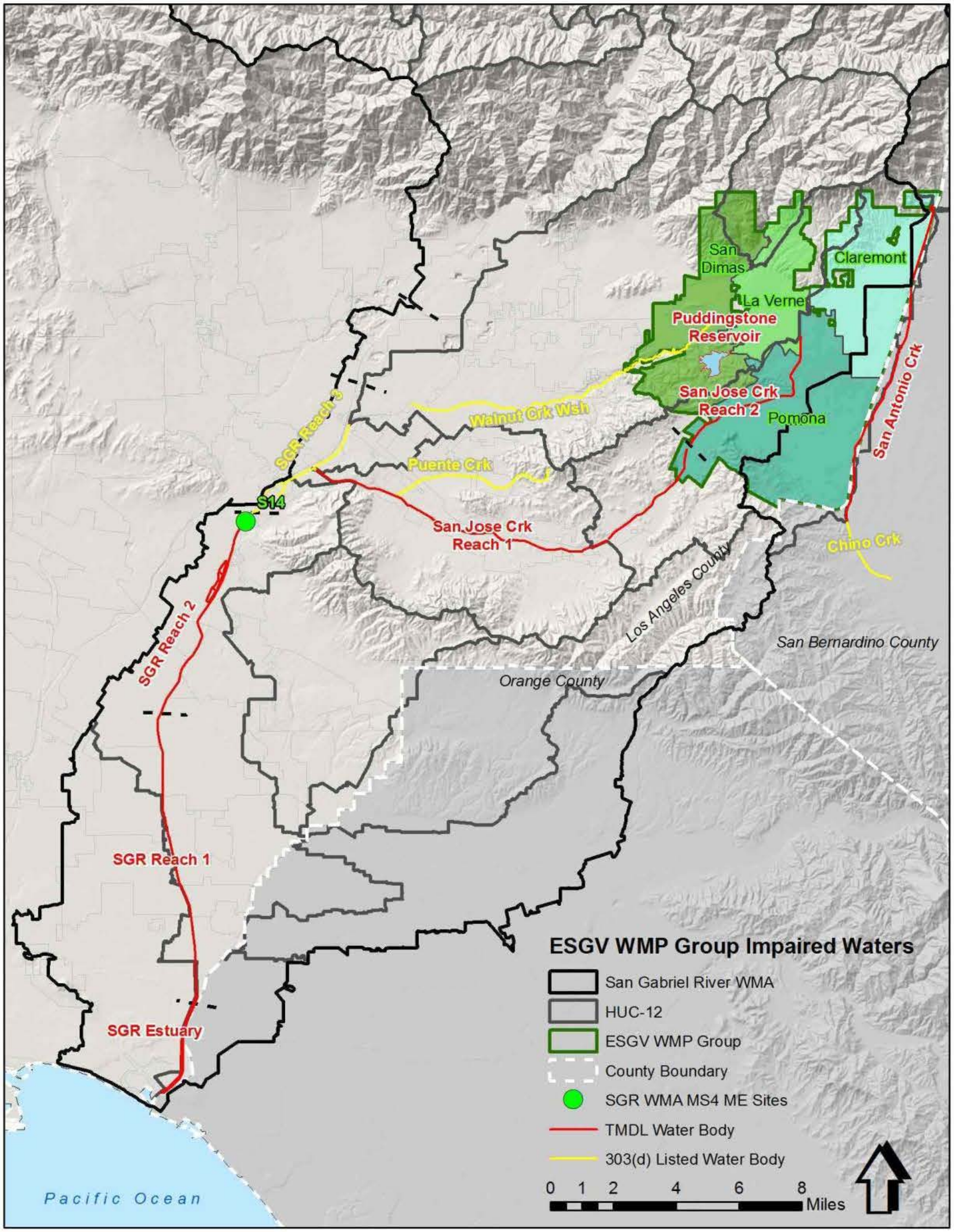
1.2 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP

The San Gabriel River Watershed encompasses 682 square miles of eastern Los Angeles County, northwest Orange County, and southwest San Bernardino County. The San Gabriel River has a main channel length of approximately 58 miles, and the main tributaries of the San Gabriel River are Walnut Creek, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek in the Santa Ana River Watershed. The Group's area is located in the Northeastern part of the San Gabriel River Watershed. **Figure 1-1** depicts the geographical scope covered by the ESGV Group. **Table 1-1** shows the land area distribution by each jurisdiction for the ESGV Group, not including the Angeles National Forest.

Table 1-1
East San Gabriel Valley Watershed Management Group Area by Permittee

Jurisdiction	Land Area (Acres)	Percent
City of Claremont	8,619	22.3%
City of La Verne	5,454	14.1%
City of Pomona	14,701	38.0%
City of San Dimas	9,865	25.5%
TOTAL	**38,639**	**100%**

Figure 1-1
Map of Los Angeles County Showing the Locations of the San Gabriel River Watershed and the ESGV Group Area



1.3 STAKEHOLDER PARTICIPATION

The ESGV Group is committed to providing the opportunity for meaningful stakeholder input throughout the development of the WMP. The ESGV Group has participated in working groups that were developed to facilitate collaboration among stakeholders and the technical team, including the Technical Advisory Committee. Informational flyers have been developed for distribution in City Halls, during community events, and posted online to solicit community input. Additional presentations have been provided at City Council meetings and on city websites that are televised to distribute information regarding Permit compliance to stakeholders.

2 Watershed Characterization

2.1 GEOGRAPHICAL DESCRIPTION

The San Gabriel River encompasses 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks of the river. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek and Chino Creek in the Santa Ana River Watershed. The WMP area is located in the upper portion of the San Gabriel River Valley. **Figure 1-1** shows the jurisdictional boundaries and nearby water bodies.

2.1.1 Geology

The geology underlying the area of the San Gabriel River Watershed in the ESGV Group can be subdivided into three general types of geologic materials:

- Bedrock materials in the steep upper portion of the watershed in the Angeles National Forest in the San Gabriel Mountains
- Sedimentary materials comprising valley fill emanating from alluvial fans from the San Gabriel Mountains
- Marine sedimentary deposits which comprise the San Jose and Puente Hills

The bedrock materials of the San Gabriel Mountains consist of igneous and metamorphic rocks which have been uplifted by faulting to form steep ridges and valleys in the upper portion of the watershed. These rocks are generally impermeable and transmit only small quantities of water through fractures.

The sedimentary materials which comprise the flatter areas of the valley are comprised of alluvial fan and fluvial deposits. These deposits tend to be very permeable, especially near the northern portions of the valley adjacent to the San Gabriel Mountains. The valley fill materials consist of interbedded silt, sand and gravels. The numerous gravel pits in the valley are located in these deposits. The deposits represent the most promising areas for regional infiltration facilities. During dry weather, surface water from the San Gabriel Mountains infiltrates rapidly into these deposits, providing a hydraulic separation between the lower portions of the watershed.

The sedimentary deposits which form the upland areas of the San Jose Hills adjacent to Puddingstone Reservoir consist of marine sandstone, siltstone, and shale. Because these deposits are fine-grained and consolidated, they have relatively low permeability. Aside from the disadvantages of higher elevation and relatively steep slopes, they represent poor areas for infiltration because of their expected low permeability.

2.1.2 Groundwater Basins

The alluvial and fluvial valley-fill deposits in the flatter areas of the watershed from several groundwater basins which underlie the WMP area. The western portion of San Dimas underlies

the Main San Gabriel Groundwater Basin. This groundwater basin is an important source of water supply, with a typical production of 250,000 acre-feet of water per year. The basin is adjudicated and actively managed by the Main San Gabriel Watermaster. Groundwater flow is generally from east to west across the basin, then southward into the Central Basin through the Montebello Forebay. There are numerous existing facilities for capture of stormwater in the Main San Gabriel Basin operated by the Los Angeles County Department of Public Works and Los Angeles County Flood Control District (LACDPW and LACFCD). The groundwater basin contains a number of contaminant plumes stemming from past agricultural an industrial practices, including nitrate, volatile organic compounds, and perchlorate. These plumes could be significant in terms of planning regional BMPs if the volume a water infiltrated has the potential to adversely affect on-going remediation efforts.

The western portion of Pomona overlies the Chino Groundwater Basin, one of the larger groundwater basins in Southern California. Historical production in the Chino Basin averages approximately 150,000 acre-feet per year. In between these two relatively large groundwater basins are the Six Basins comprised of the Canyon, Upper and Lower Claremont Heights, Pomona, Live Oak, and Ganesha Basins. These basins underlie portions of La Verne, Claremont, and Pomona. Groundwater production from these basins has typically averaged approximately 18,000 acre-feet per year. These smaller basins are separated by generally northeast-trending faults which in some cases act as barriers to groundwater flow. South of the Six Basins is the Spadra Basin underlying the southern portion of Pomona. All of the nine groundwater basins underlying the area are adjudicated and actively managed by a watermaster except the Spadra Basin. The smaller basins also contain contaminant plumes stemming from past agricultural and industrial practices including nitrates, volatile organic compounds, and perchlorate.

A potentially important aspect of the groundwater basins that may have an impact on infiltration of large volumes of water are the presence of rising groundwater (cienegas) present in various locations in the Pomona Basin which are a concern for management of the basin. Basin water levels must be closely managed to avoid rising water and property damage. The Canyon Basin, cienegas of San Dimas, and Upper Claremont Heights Basin each experienced rising groundwater in the past. These areas of high groundwater should be avoided for large-scale infiltration facilities.

2.2 RAINFALL CONDITIONS

The semi-arid climate of the Los Angeles region creates distinct hydrology differences between the dry and wet seasons. The amount of rainfall is a key variable for water quality conditions and pollutant loadings from MS4 areas. To support WMP development, a rainfall analysis was performed by aggregating data from available rain gages across the San Gabriel River watershed. For comparison, other watersheds were also analyzed. The following key metrics were evaluated for comparison for the Group. These consist of: (1) total annual rainfall, and (2) average rainfall per wet day[1]. Average rainfall per wet day serves as a coarse indicator of rainfall intensity. The

[1] Wet days defined as days having greater than 0.1 inches of rainfall.

analysis covered 25 water years from 1987 through 2011—the total rainfall for each precipitation gage was aggregated into annual totals based on water year (i.e. October through September).

For WMP development, the last 10 years of available data is used to develop the Reasonable Assurance Analysis (RAA) (Section 5). As shown in **Table 2-1**, the most recent 10 years were compared to the overall 25 years of record. Both the average and 90th percentile values were compared across the 10- and 25-year records. For the San Gabriel River Watershed, water year 2008 was a representative average year based on both rainfall metrics (19.4 inches per year and 0.76 inches per wet day compared to the average 20.7 and 0.72, respectively). Water year 2003 was approximately the 90th percentile rainfall per wet day and not greatly below the 90th percentile total rainfall (23 inches per year and 0.92 inches per wet day compared to the 90th percentile 37.8 and 0.92, respectively). As such, water year 2008 is a representative year for average conditions and water year 2003 is a representative year for critical wet conditions, which are important boundary conditions for the RAA (Section 5).

Table 2-1
Annual Rainfall in the San Gabriel River Watershed (Water Years 2002–2011 vs. 25-year Average)

Water Year	Average Rainfall Totals (inches/year)	Average Rainfall Per Wet Day (inches/wet day)
2002	30.6	0.42
2003	23	0.92
2004	13.7	0.66
2005	49.6	1.07
2006	17.9	0.64
2007	6.4	0.41
2008	19.4	0.76
2009	14.6	0.65
2010	24.1	0.82
2011	28.5	0.76
Average (1987-2011)	20.7	0.72
90th Percentile (1987-2011)	37.8	0.97

Yellow highlighted cells are the two years in each basin with the smallest difference from the 25-year average. Green cells have the smallest difference from 90th percentile of the 25-year record.

3 Identification of Water Quality Priorities

Water quality priorities establish which constituents are addressed by the WMP, and support prioritization and scheduling of WMP control measures. The Permit outlines a specific set of priorities based on Total Maximum Daily Loads (TMDLs), State Water Resources Control Board 2010 Clean Water Act Section 303(d) list, and evaluation of monitoring data. Data was obtained from numerous sources and analyzed to evaluate exceedances of WQOs. A summary of applicable WQOs is provided in **Appendix D**. Based on the analysis, water-body pollutant combinations (WBPCs) were identified and then were classified in one of the three categories as defined in the Permit. Category 1 applies if the WBPC is subject to an established TMDL; Category 2 applies if the WBPC is on the 3030(d) list, or has sufficient exceedances to be listed; and, Category 3 if observed exceedances, but not at a frequency to be listed.

3.1 WATER BODY-POLLUTANT RECEIVING WATER LIMITATION EXCEEDANCES

Monitoring data for sites within the San Gabriel River Watershed Management Area was obtained from the following sources:

- LACDPW long-term monitoring data from the San Gabriel River Mass Emission Stations S14 and S13.
- The Council for Watershed Health (CWH) monitoring data from monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN).
- The Los Angeles County Sanitation District long-term receiving water monitoring data.

Monitoring data site locations are depicted in **Figure 3-1**. The number of available data from all data sources, the number of data found above the minimum detection level, and the total number of constituents measured in a reach are summarized in **Table 3-1**. Data received from the CWH and CEDEN largely consisted of short-term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential WQO exceedances. A large number of monitoring sites were located in receiving waters downstream from the WMP area. To identify the potential water quality priorities in the WMP area, data reflective of receiving waters downstream from the WMP area were considered. It is not known at this time if the MS4 discharges from the WMP area are contributing to water quality issues observed in the downstream receiving water. Water quality priorities based on downstream conditions identified for consideration in the RAA is appropriate based on the available data. Through implementation of the Coordinated Integrated Monitoring Program (CIMP), the ESGV Group will establish receiving water monitoring sites at the WMP boundary and MS4 outfall monitoring sites within the WMP area. Evaluation of the data collected through the ESGV CIMP will provide a determination if the area is contributing to downstream exceedances of WQOs. The CIMP and WMP will be modified in two-year cycles to maintain the appropriate list of WQPs through adaptive management based on monitoring results.

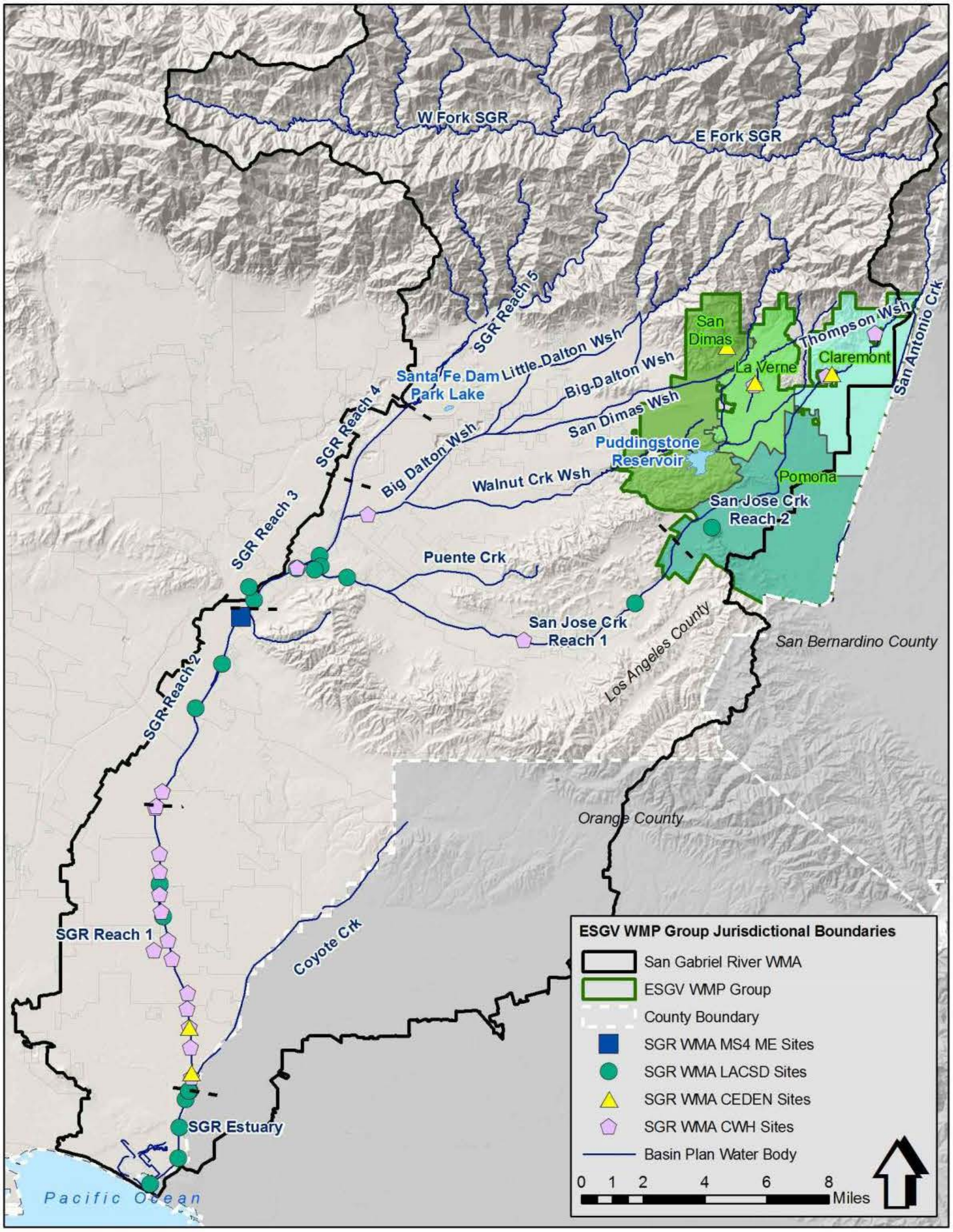


Figure 3-1

San Gabriel River Watershed water bodies, Regional Board reaches, and site locations with available water quality data. Monitoring programs with available data include: LACFCD MS4 Mass Emission (ME), Los Angeles County Sanitation District (LACSD), California Environmental Data Exchange Network (CEDEN), and Council for Watershed Health (CWH)

Table 3-1. Summary of Available Data for the San Gabriel River WMA

Reach	All Data (2002-2012)			Previous 5 Years (2007-2012)		
	Number of Analyses[1]	Number Detected[2]	Number of Constituents[3]	Number of Analyses[1]	Number Detected[2]	Number of Constituents[3]
San Gabriel River Estuary	30,598	16,026	318	12,127	4,991	177
San Gabriel River Reach 1	39,078	23,946	250	14,853	8,593	202
San Gabriel River Reach 2	10,692	3,222	251	4,732	1,513	195
San Gabriel River Reach 3	31,332	16,218	254	11,748	6,505	225
San Jose Creek Reach 1	27,439	12,348	245	12,354	6,536	203
San Jose Creek Reach 2	16,816	8,569	238	7,968	4,437	203
Walnut Creek	248	248	39	145	145	38
Thompson wash	67	65	40	0	0	0
San Dimas Wash	28	26	17	0	0	0
Big Dalton Wash	31	29	17	0	0	0
Puddingstone Reservoir[4]	28	28	17	0	0	0
Totals	156,357	80,725	419	63,927	32,720	249

1 Total number of analyses performed.
2 Number of analyses where the constituent was present in the sample above the minimum detection level.
3 Number of distinct constituents. Total copper and dissolved copper are counted as distinct constituents.
4 Including tributaries to the named water body

During dry-weather, the water bodies in the WMP area may be hydraulically disconnected from the lower sections of the watershed due to the rapid infiltration over soft bottom channels. Additionally, the CIMP contains a non-stormwater outfall program to address significant dry-weather flows from the MS4 system. Monitoring performed under the CIMP will provide information to support a determination of whether the discharges are affecting the water quality downstream of the WMP area.

The water quality data was compared to WQBELs or WQOs, to determine if the constituent exceeds the limitations. The analysis was performed with both the past ten years and the past five years of data. The two time periods were analyzed to determine if exceedances are current issues, or if they were historic problems rectified through implementation of the SUSMP. Constituents that had no observed exceedances in the past five years or those that would not meet the 303(d) listing criteria for impairment could be considered for removal from the WBPC list.

3.2 ESGV GROUP WATER QUALITY PRIORITIES

Subcategories of the three Permit defined categories were created to refine the prioritization process. Those pollutants with measurements exceeding WQOs were further evaluated and categorized based on the frequency and timing of exceedances. Category 1 constituents are divided in subclasses based on whether the TMDL is from USEPA, has effective final limitations, and if there are observed exceedances in last five years of data. Category 2 and 3 are each divided based on whether the constituent is a pollutant, and if there are observed exceedances in last five years of data. The subcategories are listed and described in detail in **Table 3-2**. As determined by the data analysis, the WBPCs are placed in the respective subcategories and listed in **Table 3-3**. Constituents may change subcategories based on future monitoring in the WMP area, source investigations occur, and BMP implementation.

Table 3-2
Details for Water Body-Pollutant Combination Subcategories

Category	Water Body-Pollutant Combinations (WBPCs)	Description
1	**Category 1A:** WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years.	WBPCs with TMDLs with past due or current Permit term interim and/or final limits. These pollutants are the highest priority for the current Permit term.
	Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years.	The Permit does not require the prioritization of TMDL interim and/or final deadlines outside of the Permit term or USEPA TMDLs, which do not have implementation schedules. To ensure WMPs consider long term planning requirements and utilize the available compliance mechanisms these WBPCs should be considered during BMP planning and scheduling, and during CIMP development.
	Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan.	
	Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years.	WBPCs where specific actions may end up not being identified because recent exceedances have not been observed and specific actions may not be necessary. The CIMP should address these WBPCs to support future re-prioritization.
	Category 1E: WBPCs with future Permit term TMDL deadlines but have not exceeded in past 5 years.	
2	**Category 2A:** 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.	WBPCs with confirmed impairment or exceedances of RWLs. WBPCs in a similar class[1] as those with TMDLs are identified. WBPCs currently on the 303(d) List are differentiated from those that are not to support utilization of WMP compliance mechanisms.
	Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment or exceedances is not resolved. Either routine monitoring or special studies identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.	WBPCs where specific actions for implementation may not be identified because recent exceedances have not been observed. Pollutants that are in a similar class[1] as those with TMDLs are identified. Routine monitoring identified in the CIMP should ensure these WBPCs are addressed to support re-prioritization in the future.
3	**Category 3A:** All other WBPCs with exceedances in the past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.
	Category 3B: All other WBPCs that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment is not resolved. Routine monitoring identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 3C: All other WBPCs but have not exceeded in past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 While one or more pollutants may be contributing to the impairment, it currently is not possible to identify the specific pollutant/stressor.

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1	San Jose Creek Reach 2	Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Copper (Dry)							I	I	
	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Copper (Dry)							F	F	
	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1	San Jose Creek Reach 2	Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

Continued

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).
2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.
3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.
Note that unless explicitly stated as sediment, constituents are associated with the water column.
I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.
303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

4 Watershed Control Measures

This section describes structural and non-structural control measures existing or planned in the ESGV Group area.

4.1 STRUCTURAL BMP DATA COMPILATION

Development of the WMP requires identification of watershed control measures, also referred to as BMPs, that are expected to be sufficient to meet receiving water and effluent limitations set forth in the Permit. The overarching goal of BMPs in the WMP is to reduce the impact of stormwater and non-stormwater on receiving water quality. This subsection describes efforts to develop consistent nomenclature for structural BMPs, and efforts to compile data regarding existing and planned regional BMPs.

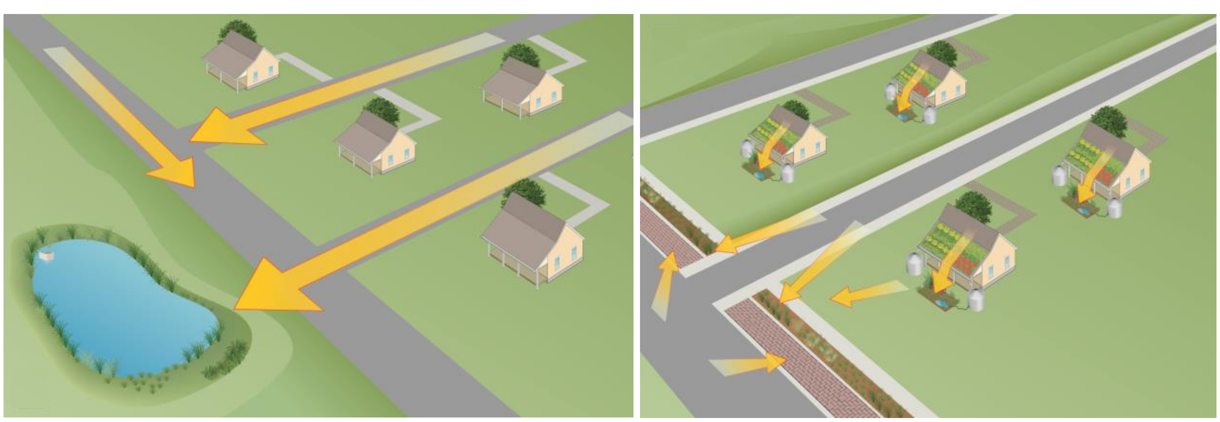
The two main categories of structural BMPs to be implemented by the WMP include regional and distributed (**Figure 4-1)**, as follows:

- **Regional BMPs:** Constructed structural practices intended to treat runoff from a contributing area of multiple parcels (normally on the order of 10s or 100s of acres or larger). Regional BMPs may be constructed within a single jurisdiction or across multiple jurisdictions.

- **Distributed BMPs:** Constructed structural practices intended to treat runoff relatively close to the source and typically implemented at a single- or few-parcel level (normally less than one acre).

Note that regional BMPs are not necessarily able to capture the 85th percentile, 24-hour storm. The subset of regional BMPs that capture the 85th percentile, 24-hour storm, are referred to as "Regional WMP Projects". Drainage areas that are captured with a Regional WMP Project are expected to be considered in compliance with interim and final TMDL limits.

Figure 4-1
Conceptual Schematic of Regional (left) and Distributed (right) BMP Implementation Approaches



4.1.1 Structural BMP Subcategories

Regional and distributed BMPs were separated into subcategories as shown in **Table 4-1**. This nomenclature is used herein to compile and describe information on existing, planned, and potential BMPs.

Table 4-1
Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water or divert to the sanitary sewer.
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips and vegetated swales)
		Rainfall harvest (cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

4.1.2 Existing BMPs in the WMP Area

Regional BMPs will be a critical component of the WMP. Individual Group Members provided summaries of existing and planned BMPs. In addition, a literature review was performed to identify further structural BMP projects that were not encompassed by the data provided. The literature review included Integrated Regional Watershed Management Plan documents, and the Notice of Intent (NOI). A summary of recently-constructed and planned BMPs, by jurisdiction, is presented in **Table 4-2**. Calculated Capacities are included, if available.

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Catch Basin #1&2 (piped to underground retention system constructed in Phase II)	Bonita Cyn Gateway-Shops Phase I	2.25 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Capacity calculated as 69.4 cubic feet per second (cfs)
San Dimas	Underground Retention System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Treatment area = 6.27 acres
San Dimas	Continuous Deflection Separator (CDS) System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Pretreatment of stormwater runoff
San Dimas	Catch Basins with (2) Hydrodynamic Separators (CDS2015-4)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway	0.14 cfs (0.7 cfs each x 2)
San Dimas	Thirteen (13) Kristar Fossil Filters (off site)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway	
San Dimas	Biofilter - Vegetated Swale	Grigolla, Raymond	0.63 Acres	627 W Allen	Tributary Area: 0.18 acres.
San Dimas	Bio-skirt, Manufactured Devices (e.g., proprietary underground devices, hydrodynamic devices, etc.)		N/A	627 W Allen	1.32 cfs
San Dimas	Infiltration (Percolation) Trench	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	3/4" 2 yr. storm event and up to 25 yr. storm conveyed through perforated pipe and allowed to infiltrate in 72hr period

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Catch Basin Filter inserts	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(6) Catch basin filter inserts, (FloGard Plus) - location of one of six catch basins
San Dimas	Roof drain boxes	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(7) Roof drain boxes with filter inserts, (FloGard Plus) - location of one of seven roof drain boxes
San Dimas	Double Modular EcoRainTank System	San Dimas High - Parking Lot	0.6 Acres	800 West Covina Blvd	Total volume = 27'W x 57.62'L x 2.89' H
San Dimas	Underground Detention Trench	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy	100% peaked mitigated flow: 0.93 Acres
San Dimas	Vegetated Swale	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy	
San Dimas	Infiltration Basin with continuous deflective separation pre treatment	Costco	22.6 Acres	520 N Lone Hill (southeast corner of Gladstone/Lone Hill)	Sized to store the 1st 0.75" runoff (0.193"/hr.). Treat sediments, nutrients, organic compounds, debris, hydrocarbons, and metals
San Dimas	Infiltration Chamber	Southern California Edison - Parking Lot	5.1 Acres	South of Cienega, 800 West Cienega Avenue	3/4" 24-hr storm runoff volume (0.27 ac/ft.)
San Dimas	Infiltration (Percolation) Trench	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.293 acres. Peak Mitigation Flow Rate: Qpm=0.08 cfs; Max Volume: 711 ft^3
San Dimas	Biofilter - Grass Swale	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.181 acres. Qpm=0.05 cfs
San Dimas	water quality inlet - FloGard	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
San Dimas	Stormtech infiltration basin	City Ventures - Tract 72590	3.70 Acres	155 N. Eucla Street	Measuring at 110 feet x 10 feet
San Dimas	Infiltration Basin	Olsen	6.0 Acres	North of Foothill Blvd	Measuring 16' x 76' x 4'
San Dimas	Bioswale Retention Basin	Care Meridian: Via Verde Rehab Center	1.8 Acres	1136 & 1148 Puente Street	Measuring 126 feet x 68 feet
San Dimas	Perforated Pipe - Retention	Tract 71259:	1.03 Acres	301 S San Dimas Avenue	Measuring length= 147 L.F. and diameter = 48"
San Dimas	Basin 7 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,082 square feet (Anticipated to treat 20.12 acres)
San Dimas	Basin 8 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,600 square feet (Anticipated to treat 39.32 acres)
San Dimas	Modular Wetland Systems (MWS) 1-13	Brasada NJD Development	270 Acres	North of Foothill Blvd	3.37 CFS
San Dimas	Bioswale (biofilter)	Lone Hill / Las Colinas Tract 60865	7.06 Acres	Lone Hill Avenue south of Gladstone and north of Saint George	0.204 CFS
La Verne	Bioretention	Oak Grove Walk		End of Dover at Valentine & Canopy	
La Verne	Infiltration (Dry) Well	Oak Grove Walk		End of Dover at Valentine & Canopy	
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin	La Verne Tech Center (planned)		Wheeler Avenue and Puddingstone Drive	
La Verne	Vegetated Swale	University of La Verne Campus West (completed 3/2014)		Wheeler Avenue and Puddingstone Drive	Swale is 327' by 4' (1,308 square feet)

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	University of La Verne Campus West (completed 3/2014)		Wheeler Avenue and Puddingstone Drive	
La Verne	Infiltration (Dry) Well	Jack in the Box (completed 12/2013)		Damien Avenue and Foothill Boulevard	System capacity 1,067 cubic feet
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	Jack in the Box (completed 12/2013)		Damien Avenue and Foothill Boulevard	
La Verne	Infiltration (Dry) Well	University of La Verne Parking Lot S (completed 8/2013)		A Street and Walnut Avenue	Retain 3/4 inch of 25 year storm, system capacity 9,424 cubic feet.
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	University of La Verne Parking Lot S (completed 8/2013)		A Street and Walnut Avenue	
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin That Empties to Stromdrain	Village La Verne		Foothill Boulevard and Bradford	
La Verne	Infiltration (Dry) Well	1300 Palomares Industrial (planned)		1300 Palomares Ave. (Palomares Ave East of Damien Ave)	
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	1300 Palomares Industrial (planned)		1300 Palomares Ave. (Palomares Ave East of Damien Ave)	
Pomona	Cultech Retention System, Cultech Filter	San Jose Elementary Parking Lot	0.38 Acres	2015 Cadillac Dr.	1146 cubic feet
Pomona	Infiltration Trench	The Southern California Dream Center	1.23 Acres	1024 Phillips Blvd.	501 cubic feet
Pomona	Infiltration Basins, Drain Inserts	Fremont Middle School Modernization	1.84 Acres	725 W. Franklin Ave.	2601 cubic feet
Pomona	Pervious Pavement, Vegetated Buffer Strip, Drain Inserts	Chase E Bank	0.09 Acres	110 E. Foothill Blvd.	1064 cubic feet

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
Pomona	Infiltration Basins, Vortex Separator	Rio Rancho Town Center	21.1 Acres	Rio Rancho Road	118,085 cubic feet
Pomona	Infiltration Trench	Charisma Life Church	0.35 Acres	305 E. Arrow Highway	2400 cubic feet
Pomona	Infiltration Trench, Vortex Separator, Drain Inserts	Mission 71 Business - Building O	11.1 Acres	Tract Map No. 61428	
Pomona	Vegetated Swale, Filtera Units	Pomona Valley Hospital Medical Center	9.1 Acres	1798 N. Garey Ave.	
Pomona	Infiltration Basin, Drain Inserts	Metrolink	3.25 Acres	2704 N. Garey Ave.	
Pomona	Bio-retention planters (3)	Home Depot Outparcel (Meridian Pomona)	0.61 Acres	2703 S Towne Ave	1779 cubic feet
Pomona	CDS Unit	Monterey Station	6.71 Acres	100 E Monterey Ave.	15834 cubic feet
Pomona	Bio-retention facilities (2), vegetated swales	Pomona Ranch Plaza, Lot 7	10.78 Acres	75 Rancho Camino Dr	
Pomona	Infiltration Basins, Drain Inserts, Vortex separator	Mission 71 Business - Building LMN	10.12 Acres	1585 W. Mission Blvd.	23376 cubic feet
Pomona	vegetated swales, infiltration trenches, clarifier, grate inlet/media filtration devices	Pomona Valley Transfer Station	10.2 Acres	1371 E Ninth Street	3817 cubic feet
Pomona	Vortex separator, infiltration trenches	Mission 71 Bldgs P, Q, R, S	23.4 Acres	1875 Mission Blvd	36106 cubic feet
Pomona	swales, infiltration	Jefferson Park (Phil & Nell Soto Park) (Planned)	2 Acres	Orange Grove Ave at Park Ave and Jefferson Ave	
Claremont	Drywell/Filter	Citrus Glen @ Pitzer Ranch	3.31 acres	926 W. Baseline Road	
Claremont	Detention Basin/Vegetated Swale/Maxwell IV Drywell	Pomona College - 4th Street Walk	1.5 acres	101 N. College Avenue	

Table 4-2
Recently Constructed and Planned BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity
Claremont	Underground Infiltration Basin	TR 72078	4.22 acres	Baseline Road & Mountain Avenue	
Claremont	Vegetated Swale	Claremont Toyota Service Building	0.2 acres	601 Auto Center Drive	
Claremont	Rain Gardens/Underground Infiltration Basins/Infiltration Trench	Millikan Laboratory & Andrew Science Hall		610 North College Avenue	
Claremont	Infiltration System (drywell)	Indian Hill Blvd and Vista	1.7 acres	Indian Hill Blvd. & Vista Dr.	3,920 cubic feet per acre
Claremont	Maxwell Deep well Drywell, Underground Detention pipes, Kristar Lo Pro Media	Gable Crossing	4.06 acres	506 and 618 w Baseline Rd.	10,017 cubic feet per acre
Claremont	2- gravel drywells, 20 vegetated swales, and 3,301 square feet pervious pavers	Neptune Apartments	0.71 acres	365 W San Jose Ave	1,307 cubic feet per acre, 436 cubic feet per acre
Claremont	3 Vegetated Swales	Roberts Pavilion	3.55 acres	690 N. Mills	8,956 cubic feet per acre
Claremont	Detention/Infiltration Tank, Trench Drain	Claremont Village Lofts	1.66 acres	127 Oberlin	4,815 cubic feet per acre
Claremont	Maxwell Drywell Infiltration System	E. Baseline and Towne	5.88 acres	E. Baseline and N. Towne Ave	13,705 cubic feet per acre
Claremont	Bio-Swale	Western Christian School	4.8 acres	3105 Padua Avenue	
Claremont	Vegetated Grass Strips, Vegetated Grass Swale, Proprietary Control Measures, Infiltration Basin	Harvey Mudd College	1.87 acres	301 Platt Blvd.	3,490 cubic feet per acre

4.2 MCMS/INSTITUTIONAL BMPS

The Permit requires the implementation of minimum control measures (MCMs) in Parts VI.D.4 through VI.D.10. Although the previous permit (Order No. 01-182) required implementation of MCMs, some of the enhancements introduced by the current Permit include:

- Additional outreach and education as part of the Public Information and Participation Program is required. For example, each Group member will be required to maintain a website with stormwater-related educational materials.
- Each jurisdiction is expected to record more information on industrial and commercial facilities within their jurisdiction as part of their Industrial/Commercial Facilities Program.
- The Permit provides more detailed information on BMP criteria for use in the Group's Planning and Land Development Program, formerly the Development Planning Program, and calls for annual reporting of implemented mitigation projects.
- An Erosion and Sediment Control Plan (ESCP), which includes elements of a Storm Water Pollution Prevention Plan (SWPPP), replaces the Local SWPPP as a required document for construction activities meeting certain criteria as a prerequisite to building/grading permit issuance.
- The Permit also requires an electronic tracking system for construction activities within their jurisdiction and mandates more aggressive inspection schedules.
- The Public Agency Activities Program remains largely unchanged with the exception of requiring an inventory of existing developments for BMP retrofitting opportunities.

A comparison between program requirements of the previous and current Permit is summarized in **Table 4-3**.

4.2.1 Customization of MCMs

The Permit allows for customizing MCMs if the effectiveness on an MCM activity can reasonably show that customization would result in equal or improved water quality effects. As an institutional preference, the City of San Dimas is proposing to align their construction site inspections with the City's building permit inspections. Inspection of construction sites one (1) acre or greater would occur bi-weekly during the wet weather season and monthly during the dry weather season. This modification will maintain adequate inspection frequencies while eliminating wet weather uncertainties. During implementation of the WMP, additional modifications may be considered as part of the adaptive management process.

Table 4-3
Comparison of Storm Water Management Program MCMs

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Public Information and Participation Program	Public Education Program - Advisory committee meeting (once per year)	x	
	"No Dumping" message on storm drain inlets (by 2/2/2004)	x	
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
	Outreach and Education	x	
	Make reporting info available to public	x	x
	Public service announcements, advertising, and media relations	x (4.B.1.c.1)	x
	Public education materials - Proper handling	x (4.B.1.c.3)	x
	Public education materials - Activity specific	x	x
	Educational activities and countywide events	x	x
	Quarterly public outreach strategy meetings (by 5/1/2002)	x	
	Constituent-specific outreach information made available to public	x	x
	Business Assistance Program	x	
	Educate and inform corporate managers about stormwater regulations	x	
	Maintain storm water websites		x
	Provide education materials to schools (50 percent of all K-12 children every two years)	x	x
	Provide principle permittee with contact information for staff responsible for storm water public educational activities (by 4/1/2002)	x	x
	Principle permittee shall develop a strategy to measure the effectiveness of in-school education programs	x	
	Principle permittee shall develop a behavioral change assessment strategy (by 5/1/2002)	x	
	Educate and involve ethnic communities and businesses (by 2/3/2003)	x (4.B.1.c.2)	x
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
Industrial/Commercial Facilities Program Industrial/Commercial Facilities Program	Track critical sources – Restaurants	x	x
	Track critical sources - Automotive service facilities	x	x
	Track critical sources - RGOs	x	x
	Track critical sources - Nurseries and nursery centers		x
	Track critical sources - USEPA Phase I facilities	x	x
	Track critical sources - Other federally-mandated facilities [40 CFR 122.26(d)(2)(iv)(C)]	x	x
	Track critical sources - Other commercial/industrial facilities that Permittee determines may contribute substantial constituent load to MS4		x
	Facility information - Name of facility	x	x
	Facility information - Contact information of owner/operator	name only	x
	Facility information - Address	x	x
	Facility information - NAICS code		x
	Facility information - SIC code	x	x
	Facility information - Narrative description of the activities performed and/or principal products produced	x	x
	Facility information - Status of exposure of materials to storm water		x
	Facility information - Name of receiving water		x
	Facility information - ID whether tributary to 303(d) listed water and generates constituents for which water is impaired		x
	Facility information - NPDES/general industrial permit status	x	x
	Facility information - No Exposure Certification status		x
	Update inventory of critical sources annually	x	x
	Business Assistance Program	optional	x
	Notify inventoried industrial/commercial sites on BMP requirement		once in 5 years
	Inspect critical commercial sources (restaurants, automotive service facilities, retail gasoline outlets and automotive dealerships)	twice in 5 years	twice in 5 years
	Inspect critical industrial sources (phase 1 facilities and federally-mandated facilities)	twice in 5 years[1]	twice in 5 years[2]
	Verify No Exposure Certifications of applicable facilities		x
	Verify Waste Discharge Identification number of applicable facilities	x	x
	Source Control BMPs	x	x
	Provisions for Significant Ecological Areas (Environmentally Sensitive Areas)	x[3]	x
	Progressive enforcement of compliance with stormwater requirements	x	x
	Interagency coordination	x	

Table 4-3
Comparison of Storm Water Management Program MCMs (continued)

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Planning and Land Development Program	Peak flow control (post-development stormwater runoff rates, velocities, and duration)	x	x[4]
	Hydromodification Control Plan	in lieu of countywide peak flow control	
	Standard Urban Stormwater Mitigation Program (SUSMP) (by 3/3/03)	x	
	Volumetric Treatment Control (SWQDv) BMPs	x	x
	Flow-based Treatment Control BMPs	x	x
	Require implementation of post-construction Planning Priority Projects as treatment controls to mitigate storm water pollution (by 3/10/2003)	x	x
	Require verification of maintenance provisions for BMPs	x	x
	California Environmental Quality Act process update to include consideration of potential stormwater quality impacts	x	
	General Plan Update to include stormwater quality and quantity management considerations and policies	x	
	Targeted Employee training of Development planning employees	x	
	Bioretention and biofiltration systems		x
	SUSMP guidance document	x	
	Annual reporting of mitigation project descriptions		x
Development Construction Program	Erosion control BMPs	x	x
	Sediment control BMPs	x	x
	Non-storm water containment on project site	x	x
	Waste containment on project site	x	x
	Require preparation of a Local SWPPP for approval of permitted sites	x	x
	Inspect construction sites on as-needed basis		x
	Inspect construction sites equal to or greater than one acre	once during wet season	once every two weeks[5], monthly
	Electronic tracking system (database and/or Geographic Information System (GIS))		x
	Required documents prior to issuance of building/grading permit	L-SWPPP	ESCP/SWPPP
	Implement technical BMP standards		x
	Progressive enforcement	x	x
	Permittee staff training	x	x
Public Agency Activities Program	Public construction activities management	x	x
	Public facility inventory		x
	Inventory of existing development for retrofitting opportunities		x
	Public facility and activity management	x	x
	Vehicle maintenance, material storage facilities, corporation yard management	x	x
	Landscape, park, and recreational facilities management	x	x
	Storm drain operation and maintenance	x	x
	Streets, roads, and parking facilities maintenance	x	x
	Parking Facilities Management	x	x
	Emergency procedures	x	x
	Alternative treatment control BMPs feasibility study	x	
	Municipal employee and contractor training		x
	Sewage system maintenance, overflow, and spill prevention	x	
IC/ID Elimination Program	Implementation program	x	x
	MS4 Tracking (mapping) of permitted connections and illicit connections and discharges	x	x
	Procedures for conducting source investigations for Illicit Connections/Illicit Discharges (IC/IDs)	x	x
	Procedures for eliminating IC/IDs	x	x
	Procedures for public reporting of ID		x
	IC/ID response plan	x	x
	IC/IDs education and training for staff	x	x

[1] Tier 2 facilities may be inspected less frequently if they meet certain criteria
[2] Subject to change based on approved WMP strategy
[3] For environmentally sensitive areas and impaired waters
[4] Maintain pre-project runoff flow rates via hydrologic control measures
[5] Sites of threat to water quality or discharging to impaired water; frequency dependent on chance of rainfall

4.3 PROCESS FOR IDENTIFYING ADDITIONAL BMPS

As part of adaptive management, additional projects will be identified and considered for further evaluation during the WMP process. The extent of BMP implementation required to achieve WMP objectives will be determined through the CIMP monitoring and is intended to adapt to new data and information.

An evaluation of projects will begin with identification of specific parcels which are publically owned, such as parks, schools, flood control facilities, or other publicly-owned open spaces which may meet the area requirements identified in the evaluation of capture potential. A preliminary list of parks and schools has been identified, including their proximity to major storm drain infrastructure, as shown in **Figure 4-3**. If the number of publicly owned parcels is not sufficient to meet anticipated capture potential, privately owned parcels with large open spaces such as parking lots will be considered.

Based on this analysis of specific project locations, a list of projects will be generated to meet the objectives of the WMP, including the potential to capture the 85th percentile, 24-hour storm event. Analysis of the projects will include the parcel location, parcel size, current ownership, and necessary infiltration capacity. The list of projects generated as a result of this process will then be evaluated based on criteria developed by the ESGV Group, as described in the following section.

The process to identify and evaluate additional projects is illustrated schematically in **Figure 4-2** and further described in the following subsections.

Figure 4-2
Process for Identification and Evaluation of Additional Projects

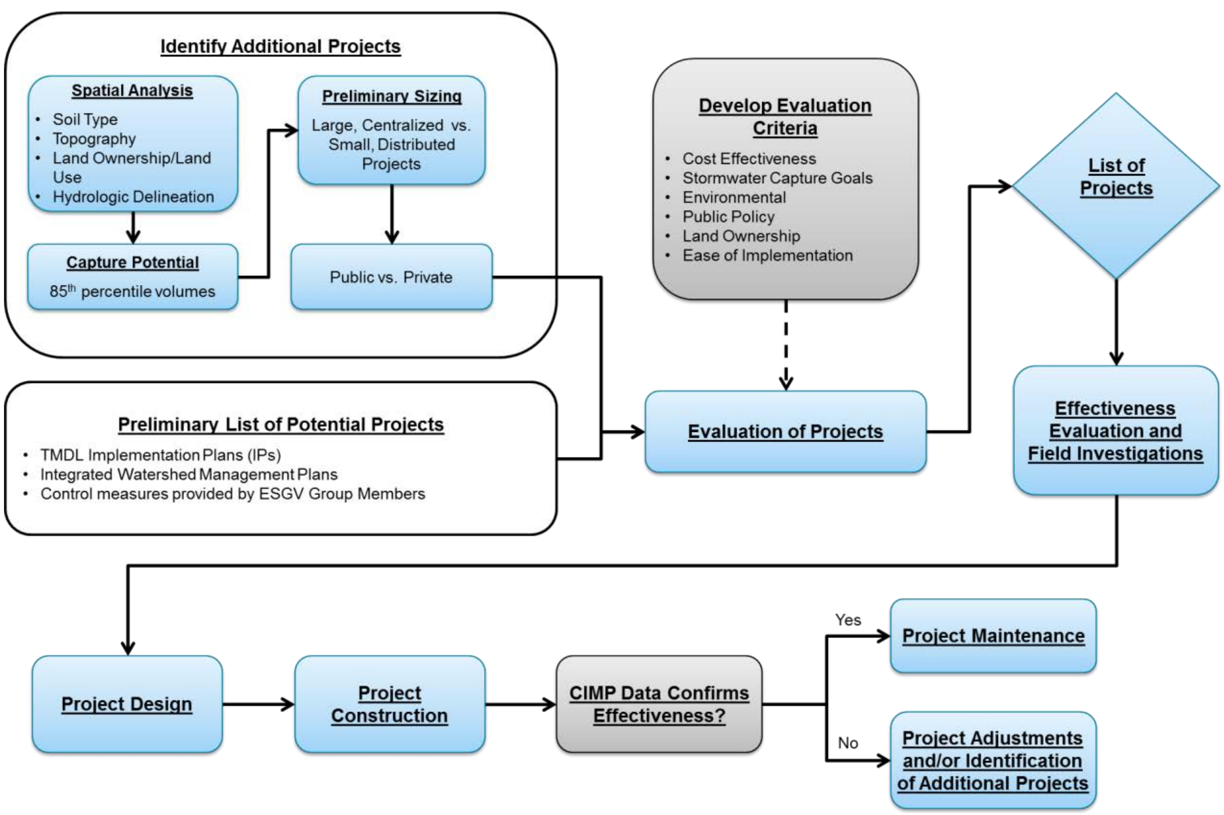
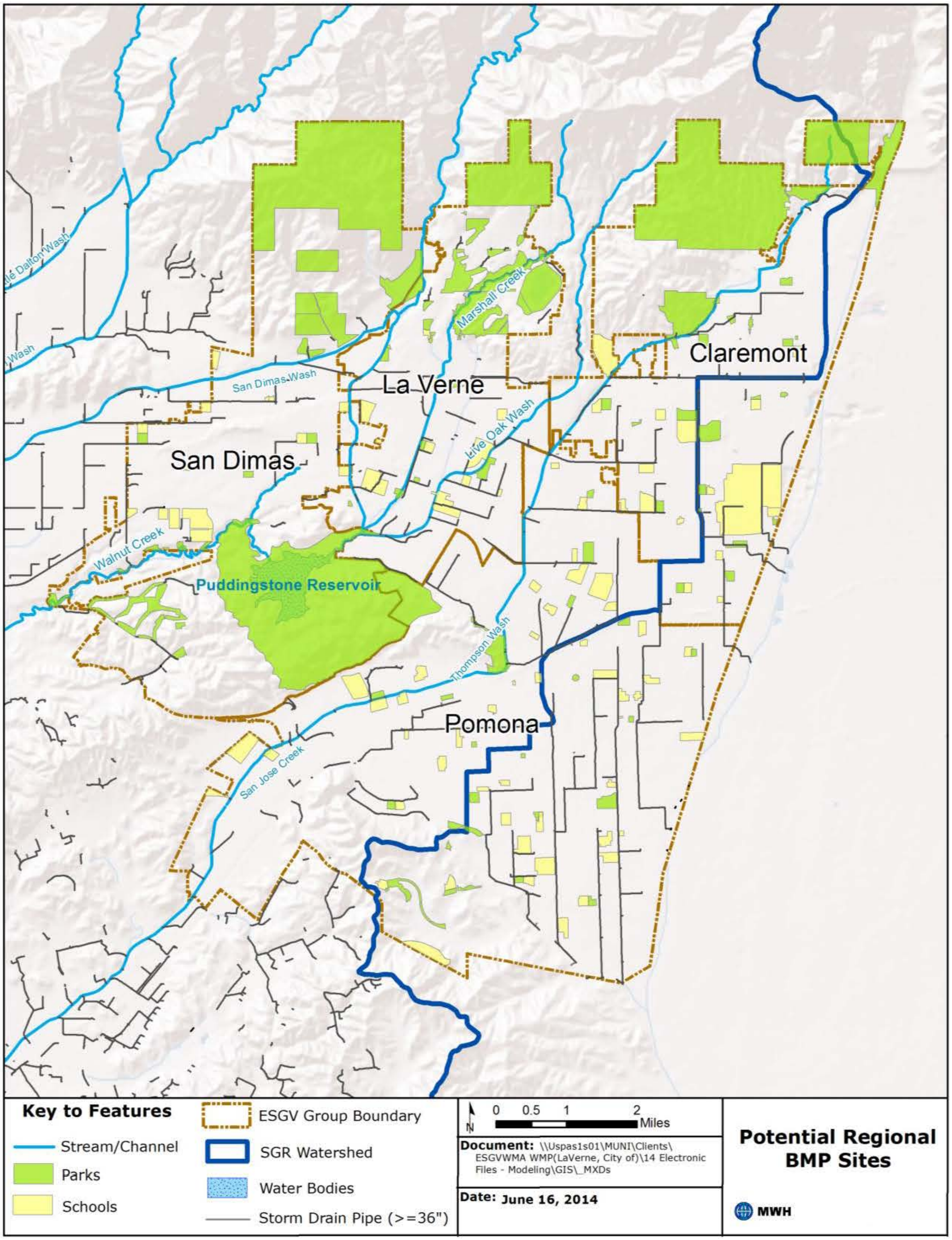


Figure 4-3
Potential Regional BMP Sites



4.3.1 Identification of Additional Projects

Additional BMPs will be identified using a detailed spatial analysis, beginning with an initial spatial analysis of fatal flaws, and culminating with an identification of potentially suitable locations.

4.3.1.1 Initial Spatial Analysis

Initially, a preliminary screening will identify locations within ESGV Group's jurisdictions that can be eliminated from consideration because they are clearly unsuitable for the siting of projects. Potential fatal flaws include adverse conditions related to:

- **Soil Type.** Surface soils such as bedrock materials, clay, or other relatively impermeable substrate will prohibit the infiltration of stormwater. Locations where these conditions exist will be considered less preferable during the initial screening.

- **Topography.** Locations with slopes greater than 25 percent will be eliminated from further consideration because of the difficulty in constructing facilities in terrain with high relief. Additionally, areas in the headwaters of the watershed will be considered less preferable because of the paucity of stormwater runoff in these areas.

- **Unsuitable Land Ownership and/or Land Use Designations.** Land ownership and/or prior designation of land use of areas within the ESGV Group's jurisdictional areas that would prohibit regional projects will be considered less preferable. Areas that are owned by the federal or state government will be considered less preferable because of the difficulty of permitting maintaining projects in these areas. Other considerations will include protected open spaces or wildernesses that are less suitable for regional projects.

- **Environmental Constraints.** Environmentally restricted areas, such as superfund sites and landfills will be deemed unsuitable during the initial screening. Areas of contaminated groundwater will need to be further evaluated to determine if recharge of stormwater causes mobilization of contaminants in the aquifer.

This initial spatial screening will result in identification of areas that may have the potential to meet the 85th percentile, 24-hour storm event capture volume requirement. These areas may be considered for further evaluation as potential Regional WMP Project locations.

4.3.1.2 Capture Potential and Preliminary Sizing

Projects are sited to capture the required volume of water at selected locations along stormwater flow paths within the jurisdictional areas. A few centralized locations at lower elevations in the watershed will require larger acreage and greater infiltration capacity than numerous distributed regional facilities located higher in the watershed. The intent of the capture potential analysis is to assess the practicality of a few centralized projects and evaluate the practical requirement for a larger number of distributed projects. Using typical infiltration rates, the size of a potential project can be evaluated if the volume of water to be captured is known. The next step in the progressive spatial analysis is to perform preliminary sizing of required facilities at key locations in the watershed. This will provide information as to the practicality of larger centralized projects and distributed projects.

4.3.2 Evaluation Criteria Development

The list of potential projects will be evaluated based on criteria developed by the ESGV Group, in order to determine the projects best suited for achieving the multi-benefit objectives of the WMP. **Table 4-4** identifies potential categories for evaluation criteria to prioritize projects and their ability to meet MS4

Permit requirements and the ESGV Group's goals. The following potential categories and considerations will be refined by the ESGV Group.

Table 4-4
Project Evaluation Criteria

Criteria Category	Considerations
Cost Effectiveness	Life Cycle Cost Capital Cost Operations and Maintenance Cost Funding Options (Grants, State Revolving Funds, other funding)
Stormwater Capture Goals	Capacity or Volume of Water Captured Water Quality Groundwater Recharge/Infiltration Capacity Geographical Location
Environmental	Environmental Constraints Reduced Energy Consumption Consumption of Other Resources Multi-use benefits Impact on habitat or species
Public Policy Institutional Issues	Political Constraints Education/Outreach Political Support Partnerships
Land Ownership	Public vs. Private Land Acquisition Impediments
Ease of Implementation	Permitting Schedules (short term vs. long term) Constructability Site Accessibility

4.3.3 Ranking Potential Projects

The list of potential projects will be ranked in accordance with the evaluation criteria described above and refined. Initially, ranking by category will be relatively simple, using qualitative weighting descriptions such as "favorable", "moderately favorable", and "not favorable". More quantitative criteria and weighting factors will be developed if necessary and if more quantitative data becomes available. Projects will be further evaluated through effectiveness evaluations and field investigations as necessary.

5 Reasonable Assurance Analysis and Watershed Control Measures

This section describes the RAA and presents the capacities of watershed control measures (WCMs) required to address the water quality priorities for the ESGV WMP. In this section, the terms WCMs and BMPs are used interchangeably. While the Permit prescribes the RAA as a quantitative demonstration that WCMs will be effective, the RAA for the ESGV WMP was also designed to identify and prioritize control measures to be implemented by the Group. In other words, the RAA for the ESGVWMP also supported the selection of WCMs. Furthermore, the RAA was used to schedule/sequence the implementation of BMPs to assure attainment of the interim WQBELs and RWLs.

For this WMP, the RAA process led to a decision by the Group to base the WMP around networks of BMPs that are able to collectively retain the volume associated with the 85th percentile storm, as depicted in **Figure 5-1** and described below. By using design storm retention as the basis for the RAA, it comprehensively addresses all Water Quality Priorities, as follows:

- Retention of the design storm addresses all Category 1, 2 and 3 pollutants
- Retention of the design storm addresses any additional pollutants that may arise as Water Quality Priorities during EWMP implementation
- Retention of the design storm addresses both wet and dry weather issues
- The schedule for implementing BMPs to retain the design storm (Section 5.3) is the schedule for addressing all current and future Water Quality Priorities, including Puddingstone Reservoir.

5.1 REASONABLE ASSURANCE ANALYSIS

A key element of each WMP is the RAA, which is used to demonstrate “that the activities and control measures…will achieve applicable WQBELs and/or RWLs with compliance deadlines during the Permit term”. The WMP has closely followed the RAA Guidelines issued by the Regional Board on March 25, 2014 (Los Angeles Regional Water Quality Control Board, 2014). The RAA is a predictive quantitative process that includes the following components:

Step 1: Incorporates Water Quality Priorities and identifies numeric goals to address them: Numeric Goals, which represent RAA drivers, include TMDL targets, WQBELs, RWLs and the 85th percentile design storm volume. The estimated baseline/existing loading or design storm volumes provides a reference point of comparison for measuring BMP performance and cost-effectiveness (i.e. the difference between the current loading or design storm volumes and predicted loading or volumes after BMPs are implemented, and the cost of those BMPs).

Step 2: Identifies opportunities for BMP implementation in the WMP area: the RAA inherently includes an exploratory element for evaluating BMP opportunities. The opportunities of most interest are right-of-way (ROW) and public parcels, as land acquisition can be prohibitively expensive.

Step 3: Evaluates effectiveness of potential BMPs on receiving water quality, jurisdictional loading and/or design storm runoff volume: this WMP will serve as a "recipe for compliance" for each jurisdiction. As such, assessment of the effectiveness of BMP scenarios requires consideration of averaging/simulation periods and determination of points where load or volume reductions will be assessed. In general, load reductions are assessed in-stream while design storm volume reductions are assessed at end-of-pipe.

Step 4: Identifies the combination of BMPs expected to attain Numeric Goals: the RAA is an iterative process that evaluates different combinations of BMPs and quantify their effectiveness. It is through the iterative modeling process that certain practices have been prioritized for inclusion in the WMP based on cost and feasibility.

Step 5: Supports scheduling to implement the BMPs over a timeline that addresses milestones cost-effectively: the pace at which BMPs are implemented is dictated by applicable TMDL and WMP milestones. Areas where BMP implementation offers the greatest immediate benefit for the lowest cost have been highlighted and recommended for the early implementation phases.

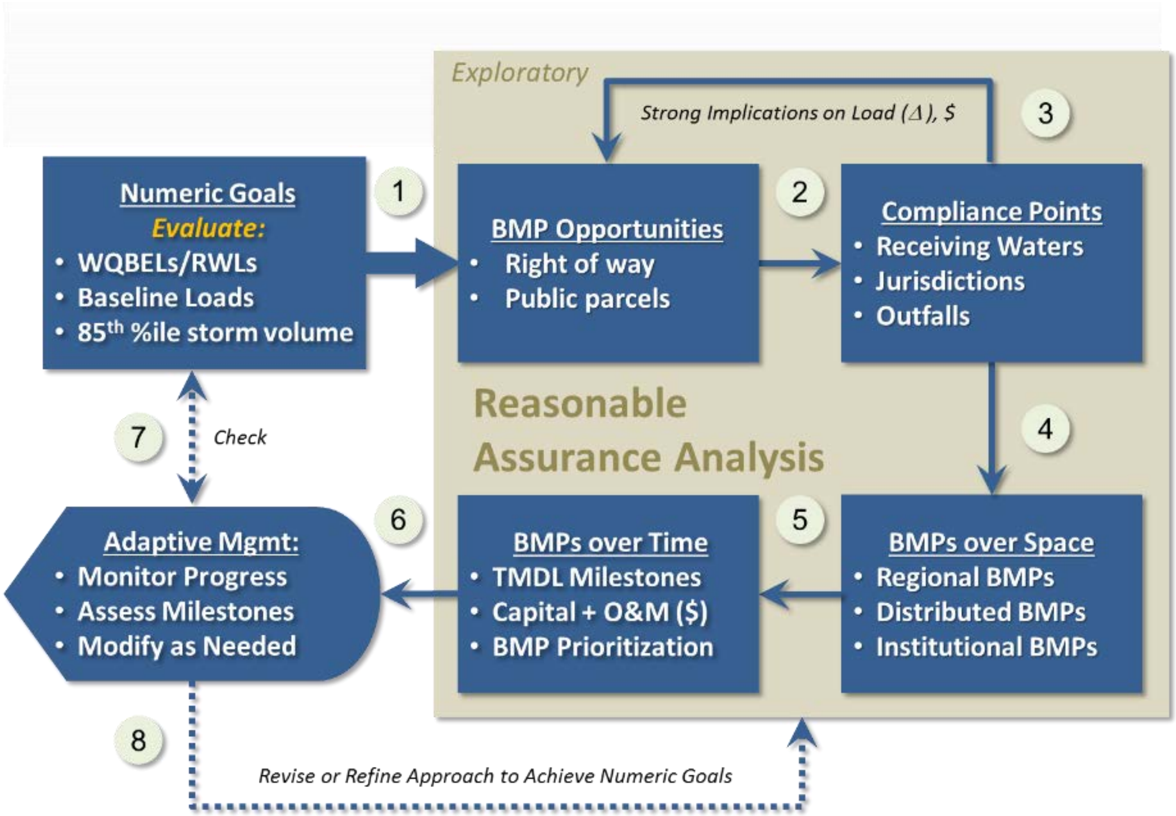
Step 6: Supports the future adaptive management process to incorporate new data and experience gained during BMP implementation: the BMP capacities identified in this WMP will be achieved over decades of implementation, and the adaptive management process will take place over two-year cycles to incorporate new data and regulatory modifications. Future data/outcomes that could affect the level of BMP implementation include new monitoring data collected through implementation of the CIMP, experience gained from BMP implementation, and changes to the water quality standards (i.e., beneficial uses or WQOs).

The RAA effort presented herein has evolved over the course of WMP development, and has been refined as new insights have come to light. The RAA will certainly be revisited and further refined with future adaptive management cycles as the WMP is implemented and performance validated.

Determination of compliance with this WMP will be on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented by each jurisdiction. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with RWLs and WQBELs of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals across the planning area, but the cities are provided flexibility to modify the BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the CIMP, indicate that less extensive BMP implementation is needed to achieve Permit limitations.

In order to establish an initial scenario for BMP implementation to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the Right-of-Way (ROW), and BMPs on public and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) due to new and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs (due to overflow) may be retained with regional BMPs. During WMP implementation, ROW BMPs other than green streets may be selected, including dry wells. As part of the adaptive management process, the capacity of non-ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

Figure 5-1
Conceptual Diagram of RAA Components



5.1.1 Description of RAA Modeling System

The WMMS was used to support this RAA. WMMS is specified in the Permit as a potential tool to conduct the RAA. LACFCD, through a joint effort with United States Environmental Protection Agency (USEPA), developed WMMS specifically to support informed decisions associated with managing stormwater. The ultimate goal of WMMS is to identify cost-effective water quality improvement projects through an integrated, watershed-based approach. The WMMS is a modeling system that incorporates three tools: (1) the watershed model for prediction of long-term hydrology and pollutant loading (Loading Simulation Program in C++ (LSPC)), (2) a BMP model (System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN)), and (3) a BMP optimization tool to support regional, cost-effective planning efforts (Nonlinearity-Interval Mapping Scheme (NIMS)). The WMMS encompasses the County's coastal watersheds of approximately 3,100 square miles, representing 2,566 subwatersheds (**Figure 5-2**).

For the ESGV Group, the 67 subwatersheds in the WMP area that are represented by WMMS were spatially refined by intersecting with jurisdictional/city boundaries of the Group, resulting in 98 unique subwatershed-city areas. Out of these 98 areas, 78 were hydrologically connected to at least one "RAA assessment point" used to evaluate the waterbodies of concern for this analysis.

Figure 5-3 shows the model spatial domain for the WMP with the jurisdictional and hydrological boundaries associated with the four RAA assessment points. The RAA assessment points are described in more detail below.

WMMS is available for public download from LACFCD. The version of WMMS used for the WMP has been enhanced/modified in several ways, consisting of:

- Updates to meteorological records to represent the last 10 years and to allow for simulation of the design storm;
- Calibration adjustments to incorporate the most recent 10 years of water quality data collected at the nearby San Gabriel River mass emission station;
- Enhancements to LSPC to allow for simulation of non-structural BMPs;
- Enhancements to SUSTAIN to allow for representation of an expanded/modified BMP network;
- Application of a second-tier of BMP optimization using SUSTAIN, which replaces the NIMS component of WMMS.
- Optimization of BMP effectiveness for removal of bacteria pollutants (rather than metals only); and
- Updates to GIS layers, as available.

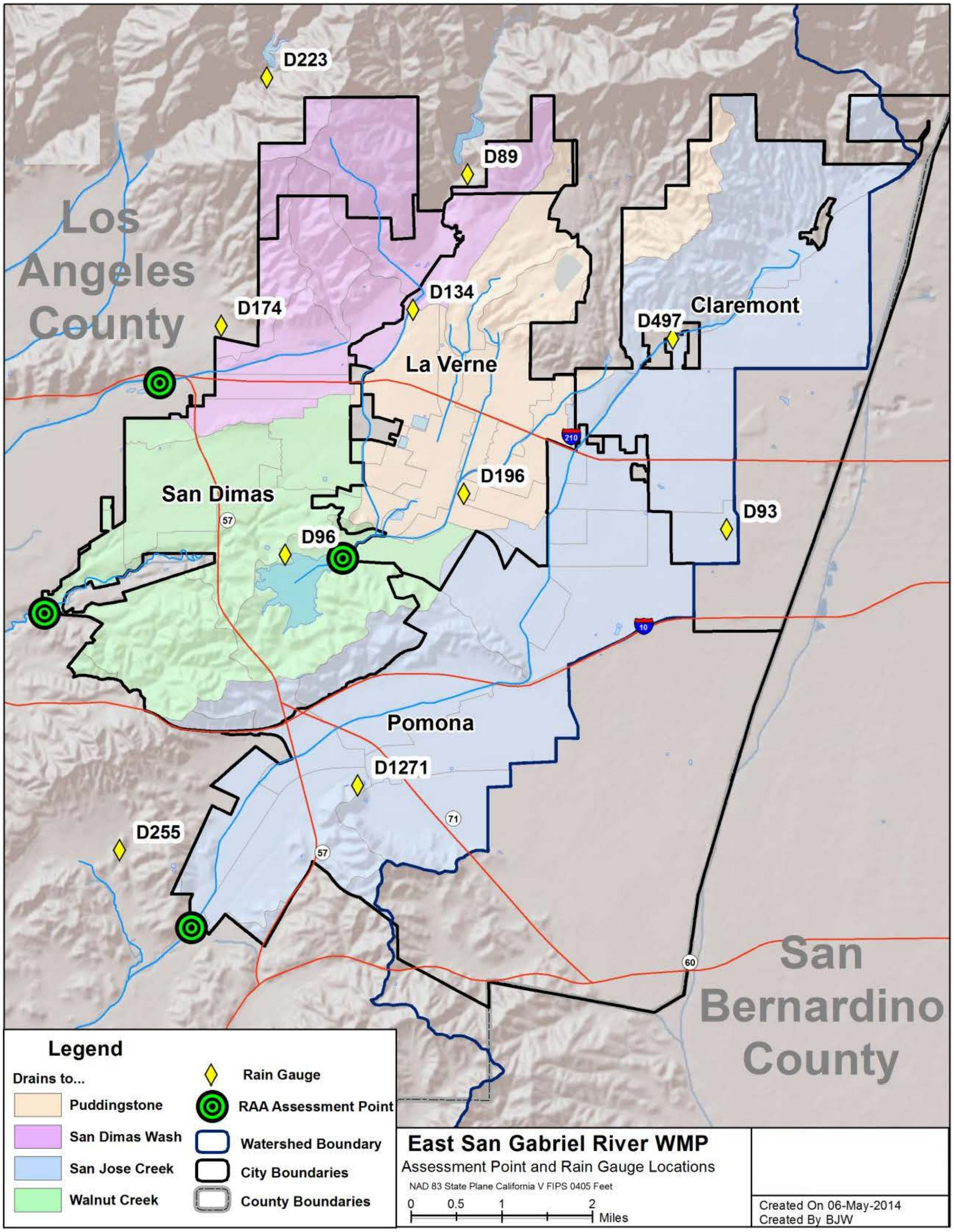
5.1.1.1 Overview of Watershed Model - LSPC

The watershed model included within WMMS is the LSPC (Tetra Tech and USEPA 2002; USEPA 2003; Shen et al. 2004). LSPC is a watershed modeling system for simulating watershed hydrology, erosion, and water quality processes, as well as in-stream transport processes. LSPC also integrates a geographic information system (GIS), comprehensive data storage and management capabilities, and a data analysis/post-processing system into a convenient PC-based Windows environment. The algorithms of LSPC are identical to a subset of those in the Hydrologic Simulation Program–FORTRAN model with selected additions, such as algorithms to dynamically address land use change over time. Another advantage of LSPC is that there is no inherent limit to the size and resolution of the model than can be developed, making it an attractive option for modeling the Los Angeles region watersheds. USEPA’s Office of Research and Development first made LSPC available as a component of USEPA’s National TMDL Toolbox (http://www.epa.gov/athens/wwqtsc/index.html). LSPC has been further enhanced with expanded capabilities since its original public release.

The WMMS development effort culminated in a comprehensive watershed model of the entire Los Angeles County area that includes the unique hydrology and hydraulics of the system and characterization of water quality loading, fate, and transport for all the key TMDL constituents (Tetra Tech 2010a, 2010b). Since the original development of the WMMS LSPC model, Los Angeles County personnel have independently updated the model with meteorological data through 2012, and refined the physical representation of the spreading grounds with higher resolution information.

Figure 5-2
WMMS Model Domain, Land Uses, and Slopes by Subwatershed

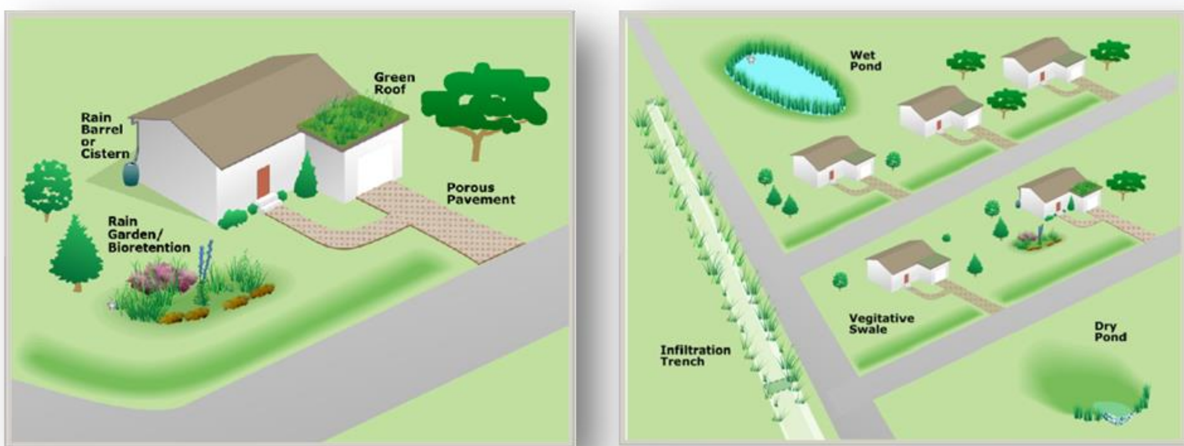
Figure 5-3
ESGV WMP Area Spatial Domain as Represented in WMMS



5.1.1.2 Overview of Small-Scale BMP Model – SUSTAIN

SUSTAIN was developed by USEPA to support practitioners in developing cost-effective management plans for municipal storm water programs and evaluating and selecting BMPs to achieve water resource goals (USEPA, 2009). It was specifically developed as a decision-support system for selection and placement of BMPs at strategic locations in urban watersheds. It includes a process-based continuous simulation BMP module for representing flow and pollutant transport routing through various types of structural BMPs. Users are given the option to select from various algorithms for certain processes (e.g., flow routing, infiltration, etc.) depending on available data, consistency with coupled modeling assumptions, and the level of detail required. **Figure 5-4** shows images from the SUSTAIN model user interface and documentation depicting some of the available BMP simulation options in a watershed context.

Figure 5-4
SUSTAIN Model Interface Illustrating Some Available BMPs in Watershed Settings



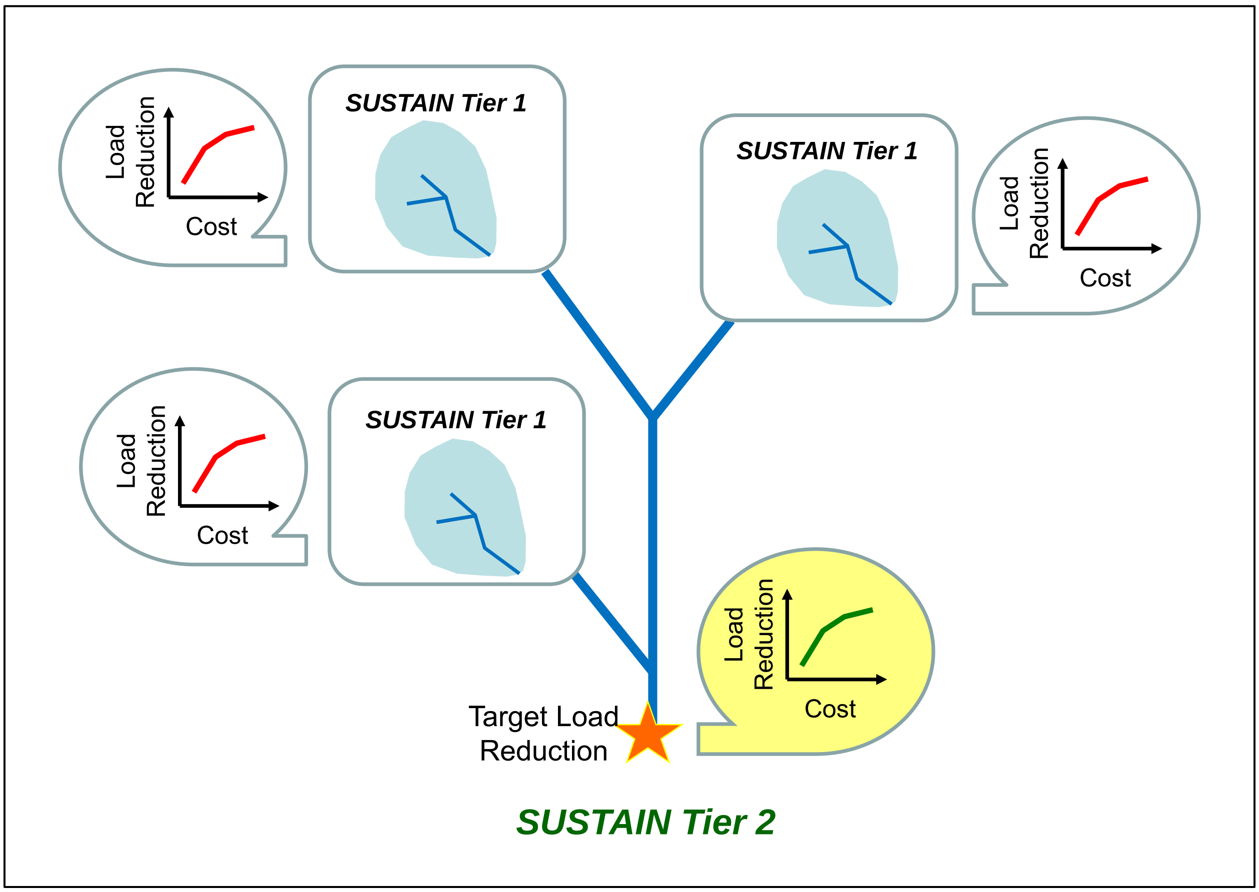
SUSTAIN extends the capabilities and functionality of traditionally available models by providing integrated analysis of water quantity, quality, and cost factors. The SUSTAIN model in WMMS includes a cost database comprised of typical BMP component cost data from a number of published sources including BMPs constructed and maintained in Los Angeles County. SUSTAIN considers certain BMP properties as “decision variables,” meaning that they are permitted to change within a given range during model simulation to support BMP selection and placement optimization. As BMP size changes, so do cost and performance. SUSTAIN runs iteratively to generate a cost-effectiveness curve comprised of optimized BMP combinations within the modeled study area (e.g., the model evaluates the optimal width and depth of certain BMPs to determine the most cost-effective configurations for planning purposes).

5.1.1.3 Overview of Large-Scale BMP Model

WMMS was specifically designed to dynamically evaluate effectiveness of BMPs implemented in subwatersheds for meeting downstream RWLs while maximizing cost-benefit. The structural BMP strategies included in WMMS primarily focus on (1) distributed green infrastructure BMPs and (2) regional BMPs. With the number of alternative combinations of BMPs possible in a watershed, the ability to evaluate and compare the benefits and costs of each scenario (representing a combination of multiple BMPs) is highly desirable. WMMS includes a sophisticated optimization routine that does this in the context of the large-scale routing network using an algorithm named NIMS (Zou et al. 2010).

However, given the relatively small spatial scale of the WMP area, NIMS was not applied for this study. Instead, a two-tiered approach was applied using the NSGA-II solution technique available in SUSTAIN (**Figure 5-5**). For Tier 1, treatment capacities were optimized for each contributing segment, which resulted in unique cost-effectiveness curves for each segment based on available opportunities therein. For Tier 2, the search space was composed of Tier 1 solutions, thereby streamlining the search process. The resulting Tier 2 curve represents the optimal large scale solution because it is comprised of optimized Tier 1 solutions. This approach is especially useful for prioritizing areas for management for scheduling implementation milestones.

Figure 5-5
Conceptual Illustration of the Two-Tiered Optimization Approach



5.1.2 Model Calibration

The LSPC watershed model within WMMS was originally calibrated for hydrology using a regional approach relying on USGS observed daily streamflow datasets through Water Year (WY) 2006 (LACDPW 2010a). The calibration period for the original WMMS LSPC model began in 1996 and ended in 2006. For the RAA, an analysis was performed to evaluate performance of the LSPC model as it relates to the ESGV watershed to understand and benchmark its applicability for use as a baseline condition. The evaluation of monitoring data was extended beyond the original WMMS-LSPC calibration to include the period from 10/1/2001 through 9/30/2011.

For the San Gabriel River, hydrology was re-assessed at the Whittier Narrows Dam on the San Gabriel River (USGS 11087020) monitoring location using available data from WYs 2001-2011. The USGS gage was selected for continuity with the development and calibration of the original WMMS LSPC modeling system. At this location the upstream tributary area is 450 square miles (LACDPW 2013). Hydrograph summaries and flow regime analysis of the monitoring datasets from the San Gabriel River are presented in **Figure 5-6** to **Figure 5-10**.

To demonstrate the ability to predict the effect of watershed processes and management actions, model calibration and validation are necessary and critical steps in any model application. Acceptable model calibration criteria for benchmarking an RAA were developed by the Regional Board and are listed below in **Table 5-1** (LARWQCB 2014). The objectives of establishing model assessment criteria are to ensure the calibrated model reflects all the model conditions and properly utilizes the available modeling parameters, thus yielding meaningful results. The lower bound of "Fair" level of agreement listed in **Table 5-1** is considered a target tolerance for the model calibration process.

Table 5-1
Model assessment criteria from the RAA Guidelines

Constituent Group	Percent Difference Between Modeled and Observed		
	Very Good	Good	Fair
Hydrology / Flow	0 – 10	>10 – 15	>15 – 25
Sediment	0 – 20	>20 – 30	>30 – 40
Water Quality	0 – 15	>15 – 25	>25 – 35
Pesticides / Toxics	0 – 20	>20 – 30	>30 – 40

Table 5-2 presents the hydrology calibration assessment for the San Gabriel River gage. Nash-Sutcliffle efficiency is a correlation coefficient commonly used in hydrological modeling to measure how well a model predicts temporal variation. A value of 1.0 means a perfect match between modeled and observed. A value of 0 means that the computed mean of observed data is as good a predictor as the model. A negative value means that the data-mean is a better predictor than the model. Because the Regional Board guidance only required annual average flow volume metric, evaluating Nash-Sutcliffe helped to demonstrate that the model also performed well at predicting *intra-annual* flow variablilty. Hydrograph summaries and flow regime analysis of the monitoring datasets from the San Gabriel River are presented in **Figure 5-6** to **Figure 5-10**.

Table 5-2
Summary of model hydrology calibration performance for the San Gabriel River

Water Quality Parameter	Model Period	Hydrology Parameter	Modeled vs. Observed Volume (% Error)	Regional Board Guidance Assessment
In-stream flow at SAN GABRIEL R AB WHITTIER NARROW DAM CA (USGS 11087020)	10/1/2001 – 9/30/2011	Flow Volume	-3.31	Very Good
		Nash-Sutcliffe	0.64	n/a

Figure 5-6
Monthly Hydrograph for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

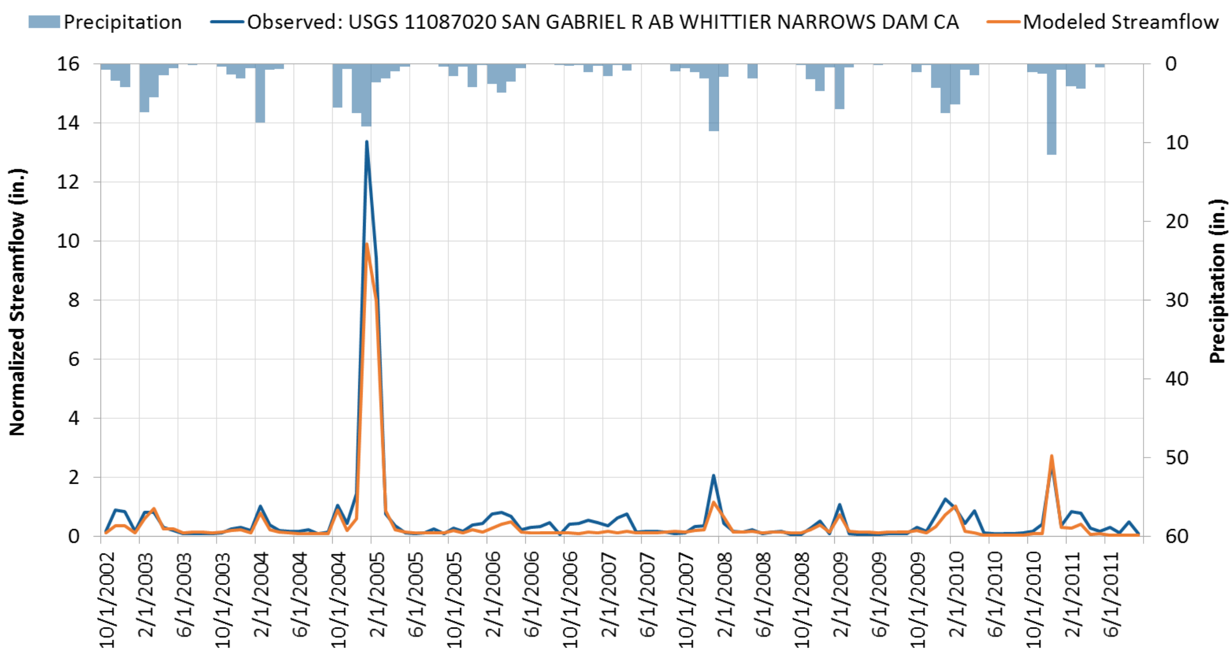


Figure 5-7
Aggregated Monthly Hydrograph for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

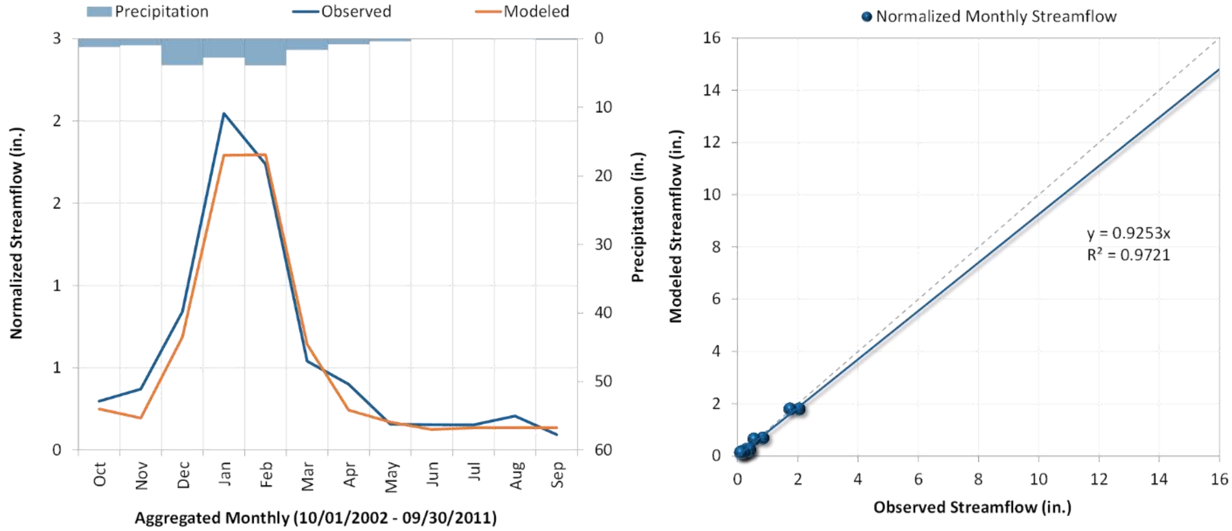


Figure 5-8
Mean daily flow for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

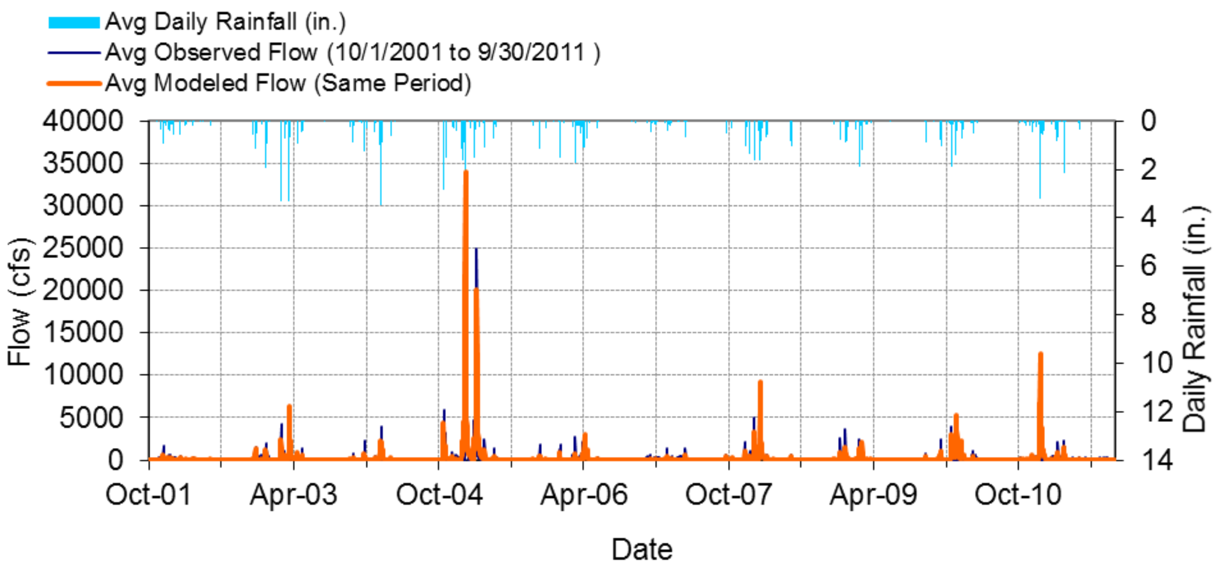


Figure 5-9
Daily Flow Exceedance for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

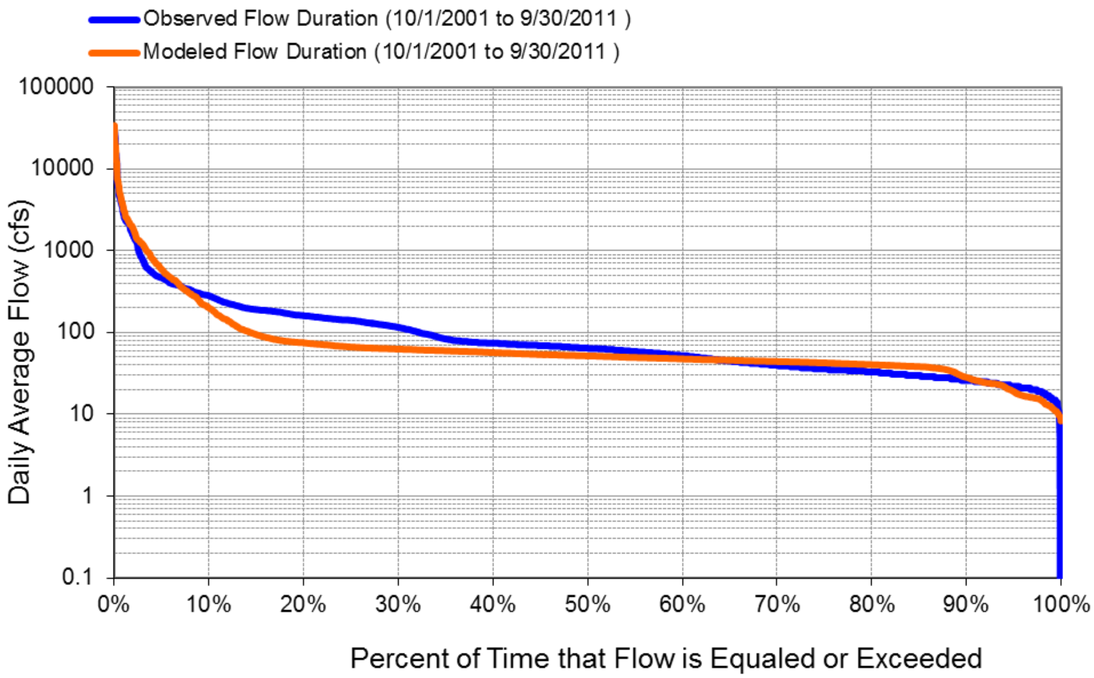
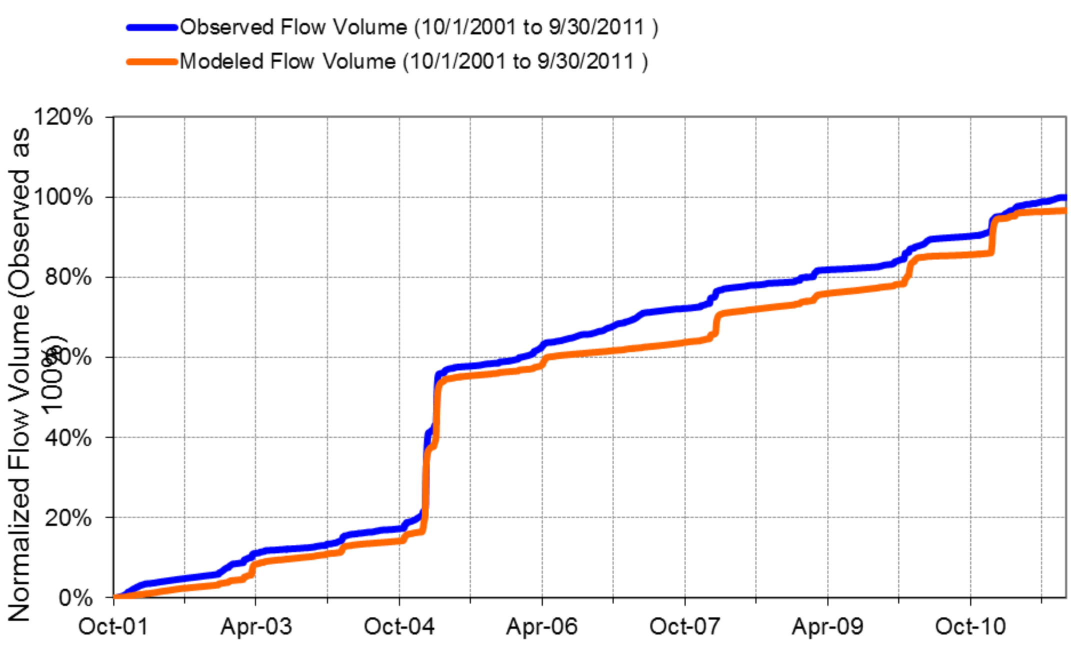


Figure 5-10
Flow Accumulation for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)



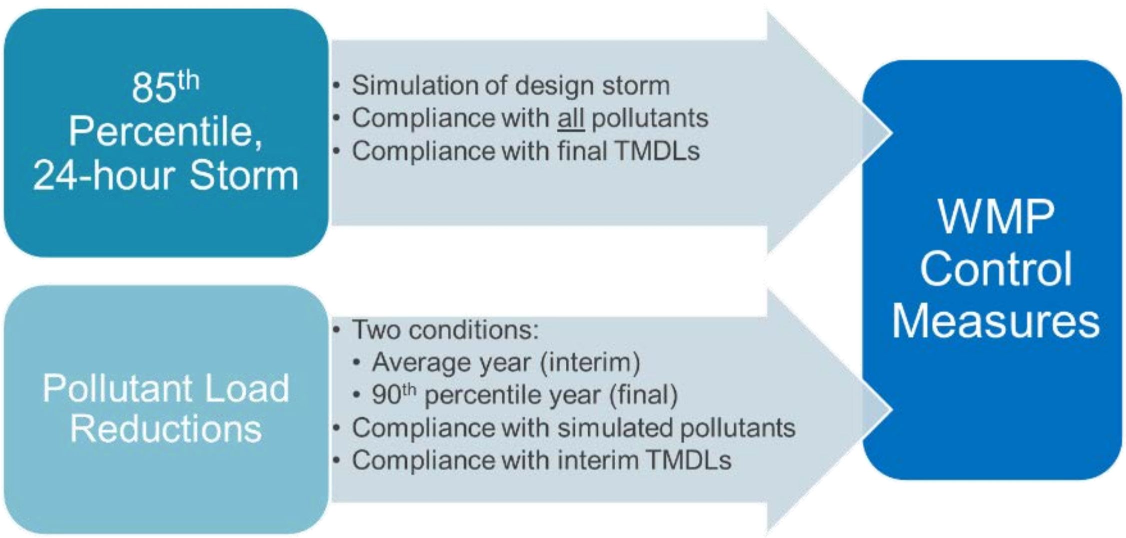
5.1.3 Water Quality Priorities and Compliance Pathways

The water quality priorities are the primary driver of the WMP and its BMPs. As shown in **Figure 5-11**, the Permit provides two pathways of numeric goals for addressing water quality priorities:

- Volume-based: Retain the standard runoff volume from the 85th percentile, 24-hour storm
- Load-based: Achieve the necessary pollutant load reductions to attain RWLs and/or WQBELs

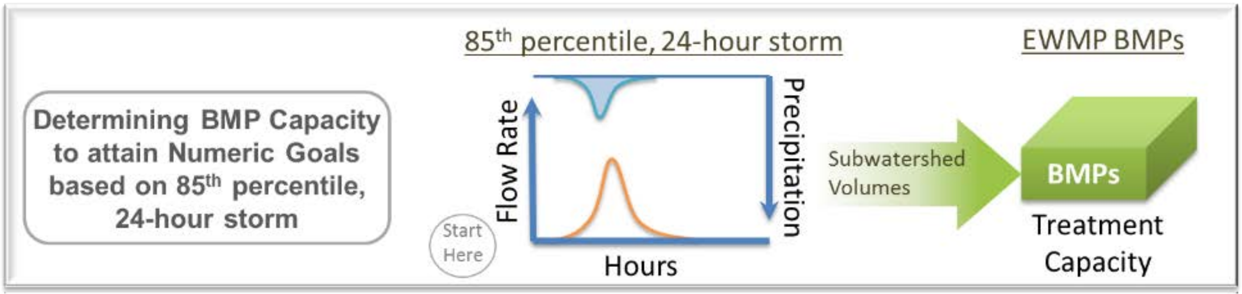
Both types of numeric goals were evaluated as part of this RAA to assess potential management implications associated with each pathway. It was decided by the Group that in the case that the level of BMP implementation effort for the numeric goal based on the 85th percentile storm is similar to the pollutant-based numeric goal , the volume-based goal would be selected because it offers increased compliance coverage (applies to all final TMDL limits).

Figure 5-11
Two Types of Numeric Goals and WMP Compliance Paths



The process for determining the necessary cumulative BMP capacity for both distributed and regional BMPs in each segment in the WMP area depends on the type of numeric goal being addressed. For the volume-based (85th percentile storm) approach, the necessary BMP capacity was determined through a design storm analysis, as illustrated in **Figure 5-12** and described in more detail below.

Figure 5-12
Illustration of Process for Determining Required BMP Capacities for the WMP using Volume-Based Numeric Goals through Simulation of the Design Storm



5.1.4 Determination of Wet Weather Critical Conditions for the RAA

This section describes the selection of the design storm as the critical condition for the RAA and WMP.

5.1.4.1 Selection of Design Storm as the Critical Condition and WMP Compliance Path

An initial step in the WMP RAA was a comparison of the volume reductions required by the load-based and volume-based numeric goals. The design storm pathway was selected as the critical condition and used to determine BMP capacities for WMP implementation.

5.1.4.2 Rainfall-Runoff Analysis for the 85th Percentile Design Storm

The volume associated with the 85th percentile, 24-hour storm varies by subwatershed. Each of the 67 subwatersheds (and corresponding 98 city-subwatershed areas) in the WMP area has a unique 85th percentile runoff volume, due to varying rainfall amounts and land characteristics (i.e. imperviousness, soils, slope, etc.). Shown in **Figure 5-13** are the rainfall depths associated with the 85th percentile, 24-hour storm for the County and ESGVWMA using rolling 24-hour periods between October 1, 1996 and September 30, 2011.

The 85th percentile rainfall values range between 0.84 and 1.09 inches within the WMP area, as summarized in **Figure 5-14**. At each location the storm distribution shown in **Figure 5-15** was used to temporally distribute the 24-hour rainfall volumes.

Figure 5-13
Rainfall Depths Associated with the 85th Percentile, 24-hour Storm

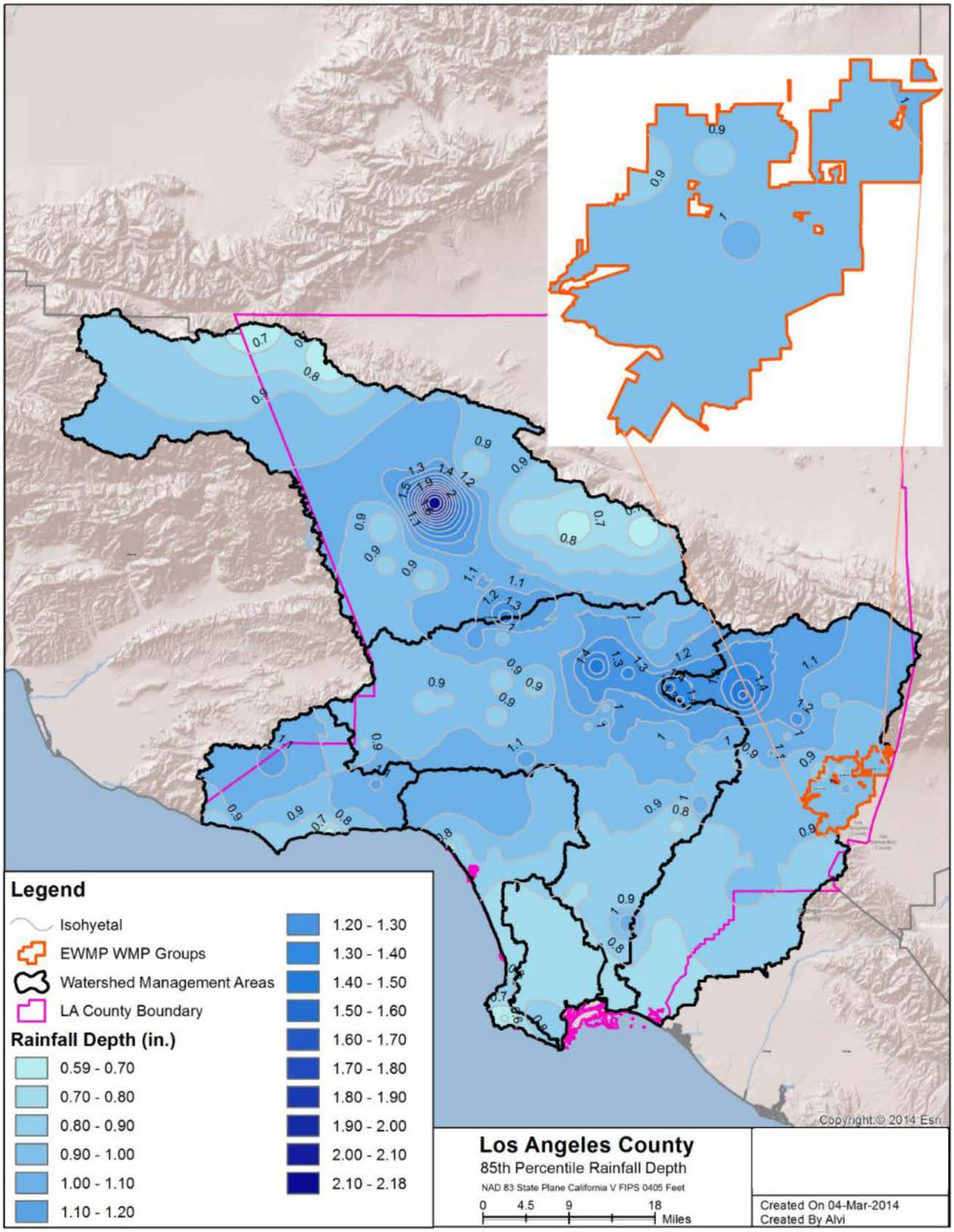


Figure 5-14
Areal Distribution Summary of 85th Percentile Rainfall in the ESGV Group Area

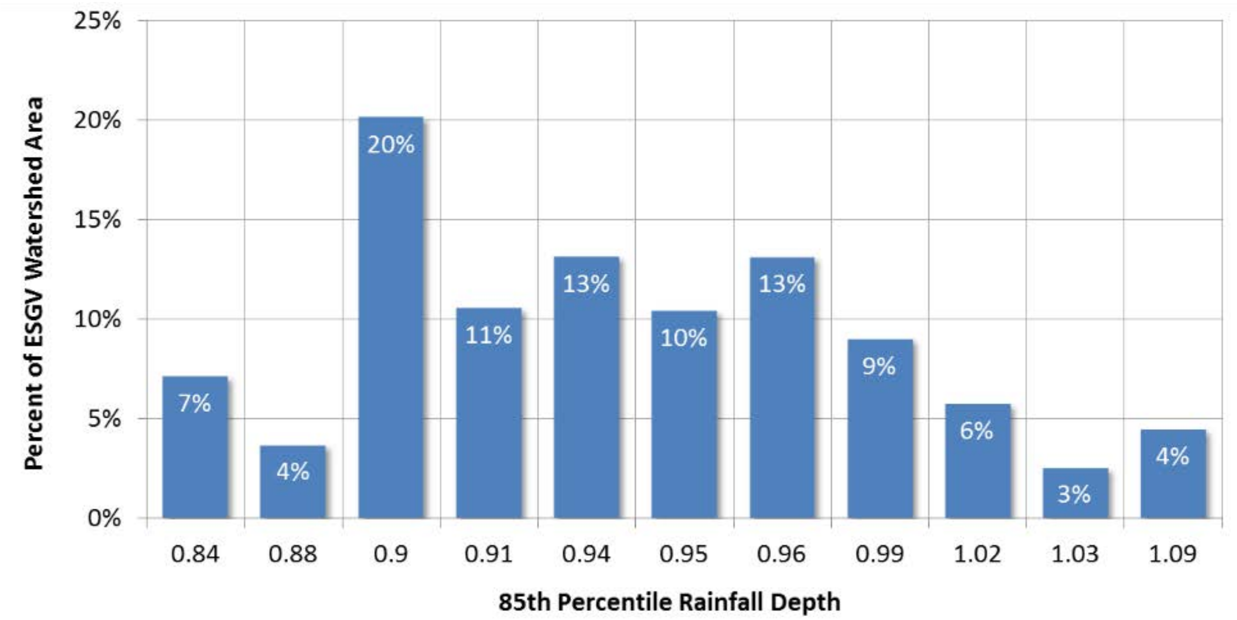
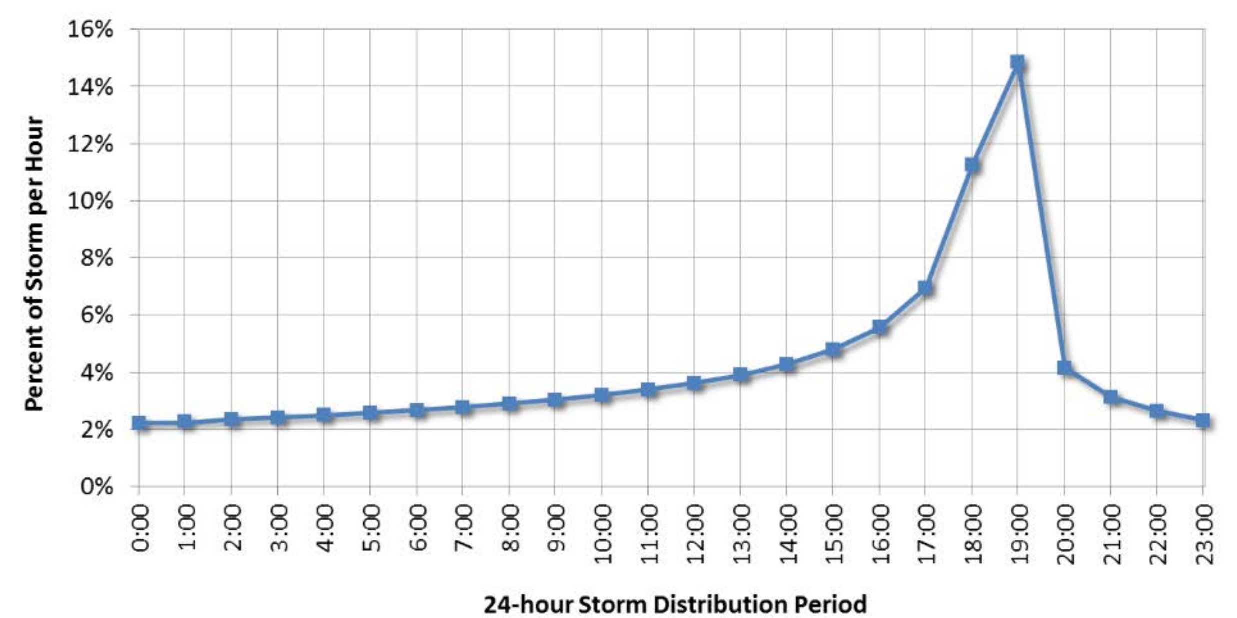


Figure 5-15
Temporal Distribution for 85th Percentile 24-hour Storm



Assuming saturated initial conditions and regionally-derived infiltration rates, the 85th percentile rainfall depths amounts were used as boundary conditions in the LSPC watershed model, to predict the associated runoff volumes for each of the 67 subwatersheds in the WMP area. Those runoff volumes represent the volumes that would need to be retained in order to attain the numeric goals associated with the 85th percentile, 24-hour storm.

Figure 5-16 shows area-based runoff exceedance associated with 85th percentile rainfall in the East San Gabriel Valley (ESGV) watershed (the amount of rainfall that is ultimately discharged from each subwatershed during the design storm). About 50 percent of the ESGV subwatershed areas experiences 0.2 inches or more of runoff under the 85th percentile, 24-hour storm. About 10 percent of the area experiences about 0.5 inches or more of runoff. **Figure 5-17** and **Table 5-3** summarize the treatment capacities required to retain the 85th percentile, 24-hour rainfall by assessment point and jurisdiction.

In Section 5.2, these volumes are (1) separated by subwatershed and jurisdiction [for a total of 90 city-subwatershed areas], (2) separated between MS4 and non-MS4 sources, and (3) used to determine the capacities of BMPs needed to retain the design storm. The required MS4 treatment capacity equals the design storm volume minus the volume of non-MS4 sources (i.e. CALTRANS and industrial permittees).

Figure 5-16
Area-Based Runoff Associated with 85th Percentile Runoff in the ESGV Watershed

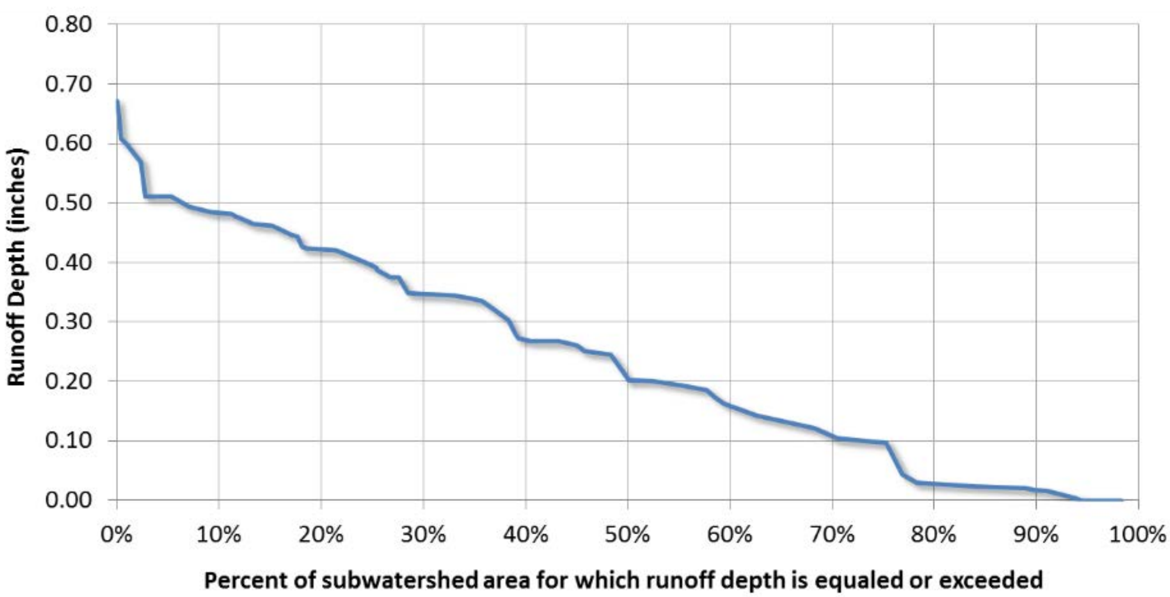


Figure 5-17
Treatment Capacity Required to Retain Runoff Associated with the 85th Percentile, 24-hour Storm (by assessment point and jurisdiction)

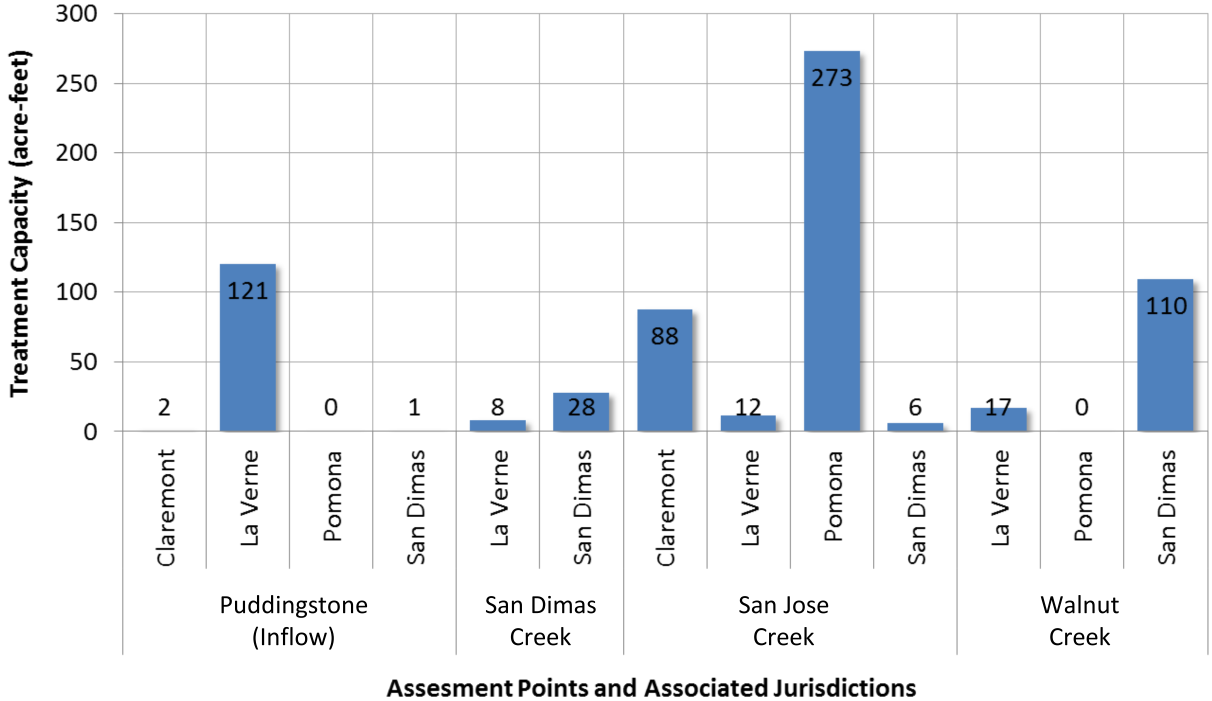


Table 5-3
Design Storm Runoff Volume per Jurisdiction

Jurisdiction	Required MS4 Treatment Capacity, acre-ft
Claremont	85.2
La Verne	126.9
Pomona	204.9
San Dimas	126.9
Total	**543.9**

5.1.5 Calculation of Required Reductions for Dry Weather

The fact that the WMP conservatively establishes control measures based on the design storm means that full attainment of all non-stormwater (dry weather) and stormwater (wet weather) limitations will be achieved by wet weather control measures implemented for the final compliance date. As such, the RAA for dry weather simply needs to demonstrate that wet weather control measures will also achieve the required dry weather reductions for interim milestones.

To calculate required reductions for dry weather, the data compiled for assessment of water quality priorities were analyzed. The water quality data are compared to the WQBELs where available or the water quality objectives to determine if the constituent exceeds the limitations in the past five years are presented in **Table 5-4**.

Table 5-4 Recent Exceedance of Water Quality Objectives

Constituent[1]	Within WMP Boundary[2] (Freshwater)	Downstream of WMP	
		Freshwater	San Gabriel River Estuary
Copper	NA	Yes[3]	Yes[3]
Lead	NA	No[3]	Yes
Selenium	NA	Yes[3]	No
Zinc	NA	Yes[3]	Yes
Nickel	NA	No	Yes
Total Mercury	NA	Yes	No
Cyanide	NA	Yes	Yes
Diazinon	NA	Yes	N/A
Nitrite-N	NA	Yes	N/A
PAHs	NA	Yes	No

1. For some constituents, individual reaches may have higher or lower exceedance frequencies than shown in this table. Evaluation of the ability to list or delist a waterbody would need to be made on a reach-by-reach basis.
2. No data are available within the WMP area within the last 5-years
3. Frequency of exceedance is based on comparison to WQBELs.

The constituents in Category 1 and the location where the WQBELs apply are summarized in **Table 5-5**. Existing concentrations were compared to applicable WQBELs, as shown in **Table 5-6**. A summary of the applicable WQOs is presented in **Appendix D**. The required reductions were calculated based on the median existing concentrations (applicable to milestones) and 90th percentile existing concentrations (selected as a critical condition for application to final limits). In general, rates of exceedances for non-bacteria pollutants were very low for dry weather conditions, such that comparison of 90th percentile concentrations to the targets results in 0% required reduction. For bacteria, the median concentration of *E. coli* was below the single sample maximum, but the 90th percentile value corresponds to a required dry weather reduction of 70% for attainment of final limits. In other words, for dry weather, the limiting pollutant is *E. coli*. Available data suggest that metals are attaining during dry weather conditions, though this will be re-evaluated during CIMP implementation.

Table 5-5 Category 1 Water Body-Pollutants with WQBELs

	San Gabriel River Reach			San Jose Creek Reach		San Gabriel Estuary	Puddingstone Reservoir	Santa Ana River
Constituent	**1**	**2**	**3**	**1**	**2**			
Copper (Dry)	E					E		
Lead (Wet)		E						
Selenium (Dry)				E	E			
Chlordane (Sediment & Water Column)							E	
DDT (Sediment & Water Column)							E	
Dieldrin (Sediment & Water Column)							E	
Mercury (tissue and water column)							E	
PCBs (Sediment and Water Column)							E	
Total Nitrogen							E	
Total Phosphorus							E	
E. Coli								E/R
Fecal Coliform								E/R

R - Receiving water limit established by a TMDL

E - Effluent limit established based on a TMDL. The wording of the permit suggests that for copper and lead WQBELs apply to all upstream reaches and tributaries for wet weather WLAs, but only to the listed reaches during dry weather.

Table 5-6
Calculated Required Reductions for Dry Weather Components of the ESGV WMP

Waterbody	Pollutant	WQBEL/ Target	Required Reduction for Assessment of Milestones (based on median concentrations)		Required Reduction for Assessment of Final Limits (based on 90th percentile concentrations)	
			50th Percentile Existing Concentration	Percent Reduction based on Mean 50th Percentile Load	90th Percentile Existing Concentration	Percent Reduction based on Mean 90th Percentile Load
Thompson Creek	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	Se ug/L	5	1.07	**0%**	2.67	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
San Dimas Wash	Cu ug/L	18.7	4.56	**0%**	10.54	0%
	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
Puddingstone Inflow	Cu ug/L	18.7	4.56	**0%**	10.54	0%
	Pb ug/L	3.2	0.78	**0%**	2.47	0%
	Zn ug/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%

5.2 BMP CAPACITIES TO RETAIN THE 85TH PERCENTILE STORM FOR FINAL COMPLIANCE

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. For each jurisdiction, the design storm runoff volume serves as the compliance target for each of its subwatersheds. As long as the volume associated with the 85th percentile storm is retained within a subwatershed (prior to interim dates for interim volumes and prior to final dates for final volumes), then that subwatershed is in compliance with the receiving water limitations and WQBELs of the Permit (see Section E.2.e).

In order to provide the initial BMP scenario for WMP implementation, categories of BMPs and their capacities that could be used to retain the 85th percentile storm were analyzed. Two broad categories of BMPs – BMPs inside the right of way (ROW BMPs) and BMPs outside the ROW (non-ROW BMPs) – were used to describe the networks of BMPs needed to retain the 85th percentile storm, as shown in **Figure 5-18**. By focusing the BMP analysis on ROW versus non-ROW, the analysis emphasizes location/opportunities to capture stormwater, as the ROW and public parcels are where MS4 BMPs can be implemented most cost-effectively.[2] Runoff from

[2] A significant portion of runoff does not drain to the streets/ROW and so capture of that runoff in the ROW [e.g., with green streets] is not feasible – non-ROW BMPs are the only option [e.g., regional BMPs prior to discharge to receiving water].

non-MS4 facilities was also estimated such that the WMP does not commit the Group to retain runoff that is the responsibility of non-MS4 sources.

The overall approach for conducting the capacity analysis described below is represented in **Figure 5-19**, which cumulatively adds the volume reductions from these different BMP categories to retain the design storm volumes. The baseline "runoff balance" between ROW and non-ROW areas is summarized in **Figure 5-18** and detailed in **Table 5-8** for the four RAA assessment points – Thompson Creek, San Dimas Wash, Puddingstone Reservoir and Walnut Creek. See **Figure 5-20** for an index of subwatersheds in the WMP area (the index numbers are used in detailed tables including **Table 5-8**).

Figure 5-18
Representation of Right of Way and non-Right of Way BMPs and Stormwater Routing

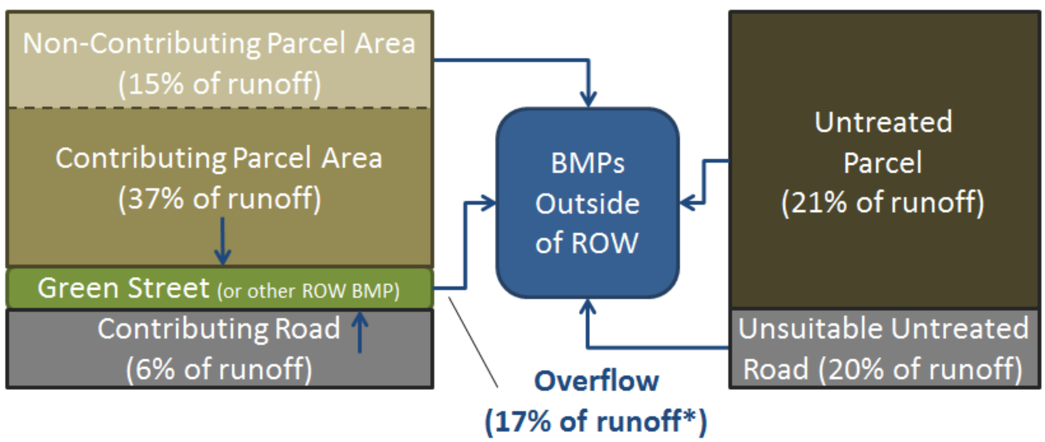


Figure 5-19
Representation of the Capacity Analysis to Achieve Volume Reductions for the 85th Percentile Storm

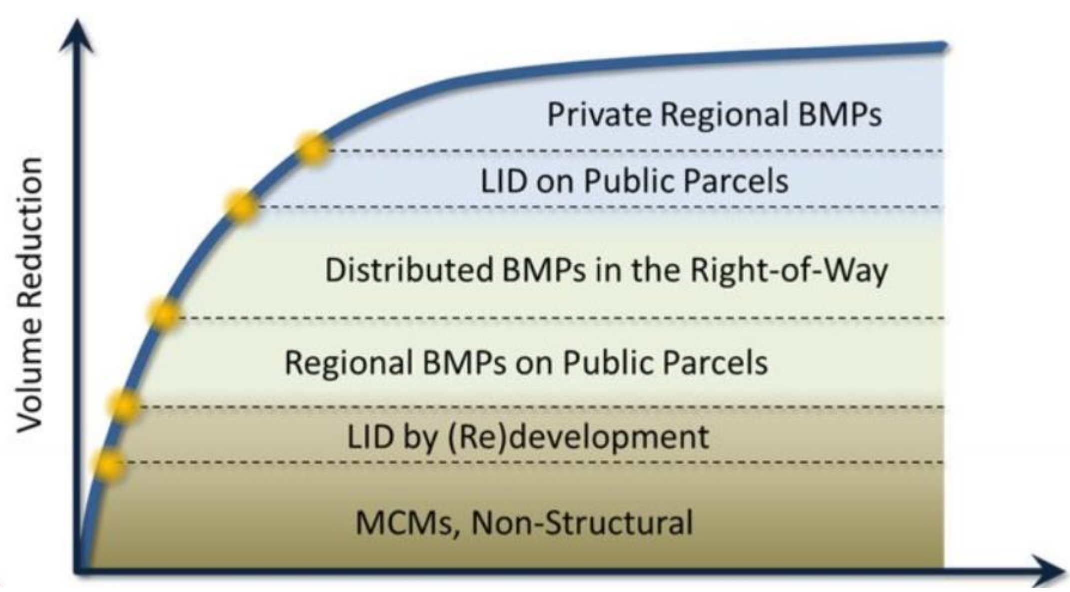


Figure 5-20
Index of Subwatersheds in the ESGV WMP Area

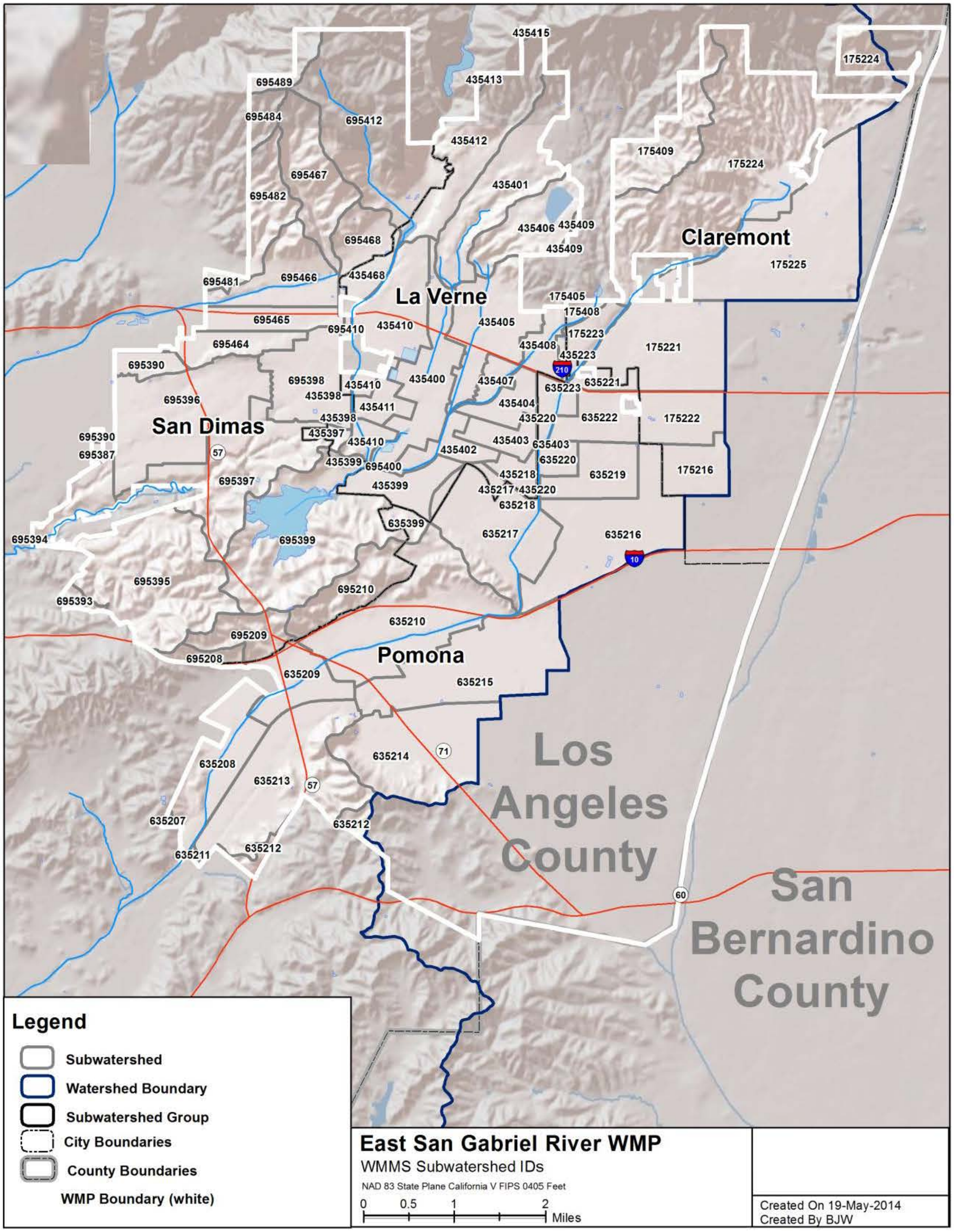


Table 5-8
Overall Watershed-specific Design Storm Volumes and Balance of ROW and non-ROW Runoff Volumes

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
Puddingstone	5400*	5400*	22.20	9.28	1.23	5.96	2.18	3.56
	5402	5402	7.80	2.48	0.34	1.75	1.01	2.23
	5405*	5405*	19.28	9.35	1.06	2.34	3.55	2.98
	5407	5407	5.97	4.17	0.65	1.04	0.08	0.03
	5408*	5408*	8.24	2.40	0.21	0.93	3.45	1.24
	5410*	5410*	21.77	7.44	0.87	3.07	6.00	4.39
	to 5401	to 5401	11.06	4.73	1.03	1.44	2.87	0.99
	to 5403*	to 5403*	5.93	3.22	0.67	0.80	0.01	1.23
	to 5404	to 5404	6.98	3.88	0.59	0.97	0.25	1.29
	to 5406	to 5406	7.26	2.10	0.28	1.53	3.36	-
	to 5409*	to 5409*	0.22	0.10	0.00	0.02	0.09	-
	to 5411*	to 5411*	6.62	3.89	0.55	1.56	0.01	0.60
Puddingstone Total			123.34	53.03	7.48	21.43	22.88	18.53
San Dimas Wash	5412*	5412*	5.59	1.60	0.45	0.83	1.97	0.75
	5464	5464	4.59	1.51	0.24	0.48	0.82	1.54
	5465	5465	9.11	1.73	0.12	1.21	1.82	4.23
	5466	5466	6.10	2.83	0.71	0.72	0.89	0.96
	5468*	5468*	7.95	3.56	0.80	1.96	0.81	0.82

Table 5-8 (continued)

Watershed	**Grouped SWS ID**	**Individual SWS ID**	**Total Design Storm Volume** (acre-ft)	**Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads** (acre-ft)	**Volume from Suitable Roads Draining to Rights-of-Way** (acre-ft)	**Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way** (acre-ft)	**Volume from Parcels Adjacent to Unsuitable Roads** (both Draining to and Draining Away from Rights-of-Way; acre-ft)	**Volume from Unsuitable Roads Draining to Rights-of-Way** (acre-ft)
	5481	5481	1.42	0.97	0.13	0.24	0.00	0.07
	5482	5482	0.50	0.09	0.02	0.02	0.28	0.09
	5484	5484	0.00	-	-	-	0.00	-
	5489	5489	0.00	-	-	-	0.00	-
	to 5413	5413	0.00	-	-	-	0.00	-
		5415	0.00	-	-	-	0.00	-
		to 5413 Total	0.00	-	-	-	0.00	-
	to 5467	to 5467	0.95	0.05	0.00	0.03	0.82	0.06
San Dimas Wash Total			36.21	12.33	2.47	5.48	7.41	8.52
Thompson Wash/ San Jose Creek	5207	5207	0.04	-	-	-	0.04	-
	5211	5211	0.02	-	-	-	0.02	-
	5212	5212	1.98	0.02	0.00	0.01	0.57	1.38
	5213	5213	31.32	6.41	0.50	4.57	14.66	5.18
	5214	5214	26.09	10.64	1.40	4.13	4.27	5.64
	5215	5215	42.55	14.42	2.06	8.48	7.55	10.05
	5217*	5217*	42.36	17.63	3.15	4.96	13.99	2.63
	5220*	5220*	11.89	5.10	0.68	3.27	0.99	1.86
	5223*	5223*	4.39	1.96	0.36	0.50	0.87	0.69
	to 5208*	5208	12.88	3.84	0.24	2.50	3.67	2.63
		5209	18.51	2.53	0.15	0.98	4.40	10.46

Table 5-8 (continued)

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
	to 5208*	5210	32.11	9.64	0.95	2.84	8.21	10.46
		to 5208* Total	63.51	16.01	1.34	6.32	16.29	23.55
	to 5216*	to 5216*	48.63	25.43	3.80	9.23	2.16	8.01
	to 5218*	to 5218*	6.09	2.51	0.21	1.39	0.72	1.25
	to 5219	to 5219	14.09	5.04	0.84	3.99	2.00	2.22
	to 5221*	to 5221*	33.84	16.00	2.39	4.33	3.74	7.39
	to 5222*	to 5222*	21.81	12.22	2.11	3.62	1.01	2.84
	to 5224	to 5224	7.32	1.49	0.16	0.79	4.12	0.76
	to 5225	to 5225	22.69	10.00	1.83	3.65	2.56	4.64
Thompson Wash/ San Jose Creek Total			378.62	144.89	20.82	59.25	75.58	78.08
Walnut Creek	5387	5387	0.81	0.55	0.04	0.14	0.00	0.08
	5390	5390	3.69	2.04	0.30	0.70	0.23	0.42
	5393	5393	0.01	-	-	-	0.01	0.00
	5394	5394	0.00	-	-	-	-	-
	5395	5395	21.11	2.71	0.55	0.69	12.84	4.32
	5397*	5397*	19.15	4.10	0.33	2.18	7.63	4.91
	5399*	5399*	18.62	0.95	0.01	1.33	2.21	14.11
	to 5396	to 5396	42.99	20.49	3.07	7.58	4.89	6.95
	to 5398*	to 5398*	20.58	10.82	1.71	4.13	1.01	2.91
Walnut Creek Total			126.96	41.66	6.01	16.74	28.83	33.71
Grand Total			665.13	251.90	36.78	102.90	134.70	138.84

5.2.1 Modeling of Individual BMP Types to Achieve Design Storm Retention

The runoff balance for ROW and non-ROW areas (**Figure 5-18** and **Table 5-8**) provides the foundation for BMP modeling to develop the initial BMP scenario for the ESGV WMP. Six types of BMPs were represented using LSPC and SUSTAIN as described in **Table 5-8**. The BMP modeling provides a robust initial strategy for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities provide reasonable assurance for attaining Permit limitations, though adaptive management will be used to refine these strategies over time.

The details of the BMP modeling are provided in **Appendix A**. In general, modeling analyses were used to determine the capacity of green streets, LID and rooftop runoff reduction to retain the design storm. It was common for maximum implementation of these control measures to be insufficient for retaining the design storm runoff from a subwatershed. In this case, the remaining capacity was assigned to regional BMPs, which will be identified in the future (likely on a combination of public and private parcels). The summary of required BMP capacities by jurisdiction for ROW and non-ROW BMPs is provided in **Table 5-9**.

Table 5-8
Types of BMPs Simulated for Design Storm Retention

BMP Type	Category	Type	Description
Green streets	ROW	Distributed	Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane.
LID due to new/ redevelopment	Non-ROW	Distributed	Retention of runoff from new and redeveloped private parcels subject to LID ordinances.
LID on public parcels	Non-ROW	Distributed	Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, dry wells, etc.)
Rooftop Runoff Reduction	Non-ROW	Distributed	Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
Regional BMPs	Non-ROW	Regional	Regional BMPs to capture and retain runoff from relatively large upstream areas prior to discharge to receiving waters. In general, the remaining runoff after implementation of the previous BMP categories was assigned to regional BMPs.

Table 5-9
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Required MS4 Treatment Capacity, acre-ft*	Potential Non-ROW BMP Capacity, acre-ft	Potential Capacity of Distributed ROW BMPs, acre-ft	Remaining Reduction assigned to Regional BMPs, acre-ft
Claremont	85.2	12.66 (15%)	32.5 (38%)	40.0 (47%)
La Verne	126.9	13.34 (11%)	39.2 (31%)	74.4 (59%)
Pomona	204.9	53.18 (26%)	55.9 (27%)	95.8 (47%)
San Dimas	126.9	14.72 (12%)	33.4 (26%)	78.7 (62%)
Total	**543.9**	**93.91 (17%)**	**161.0 (30%)**	**289.0 (53%)**

*Excludes design storm runoff from non-MS4 permitted facilities and California Department of Transportation (Caltrans) and County of Los Angeles islands

5.2.2 Final MS4 Compliance Targets and BMP Capacities by Subwatershed

The culmination of the analyses for this WMP is two key metrics, one for Permit compliance and one for WMP implementation, as follows (**Table 5-11** thru **Table 5-14**):

1. **Final MS4 Compliance Targets based on design storm runoff volume:** the runoff volume from the simulated design storm for each subwatershed, minus contributions from Caltrans and industrial permittees, is the ultimate final compliance metric for the Claremont, La Verne, Pomona and San Dimas. See column with orange font labeled "Compliance Target" in **Table 5-11** thru **Table 5-14**. Note: the Group will continue to inspect industrial facilities under the Permit inspection programs. In addition, the Group will work with Caltrans on potential options for collaborating during WMP implementation.

2. **Initial scenario of BMPs to retain design storm runoff volume:** the specific BMPs used to retain the design storm volume are not, per se, a component of compliance determination. Instead, over time each agency will report and demonstrate that the *cumulative* effect of projects implemented over time add up to the required design storm retention volumes for interim milestones and final targets. However, the initial scenario of BMPs for WMP implementation and their costs may be the most beneficial outcome of the WMP. See columns with orange font labeled "Implementation Plan" in **Table 5-11** thru **Table 5-14**, which represent the initial WMP implementation scenario. Over time, through adaptive management, the cities will likely "shift" from among different types of BMPs (e.g., increase implementation of green streets and reduce implementation of regional BMPs) or substitute alterative BMPs altogether (e.g., implement dry wells instead of green streets). These shifts will be supported by analyses to show the substituted BMPs provide an equivalent volume reduction as the replaced BMPs. Initial analyses to support adaptive management are provided in **Appendix A**.

The final compliance targets in **Table 5-11** thru **Table 5-14** are used to develop compliance targets for interim milestones in the next subsection. Recall the index of subwatersheds[3] in presented in **Figure 5-20**. The ROW and non-ROW BMP capacities for the initial WMP scenario are also shown graphically in **Figure 5-21** and **Figure 5-22**.

[3] The 67 LSPC subwatersheds within the WMP boundary were overlaid with the jurisdictional boundaries to create 98 city-subwatersheds. The city-subwatershed ID is composed of the jurisdictional identifier (the first two digits) and the original LSPC subwatershed ID (the last four digits). To identify the geographical relationship between the LSPC model subwatersheds and the city-subwatersheds shown in Figure 5-20, the last four digits of the city-subwatershed correspond to the LSPC Subwatershed IDs.

Table 5-11– La Verne Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
				Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	5.10	1.90	10,043	0.07	0.14	0.00	3.00	-	-	-
	5468*	5468*	3.20	2.03	9,313	0.02	0.12	0.00	1.03	-	-	-
		5413	0.00	-	-	-	-	-	-	0.00	-	-
		5415	0.00	-	-	-	-	-	-	0.00	-	-
	to 5413	to 5413 Total	0.00	-	-	-	-	-	-	0.00	-	-
San Dimas Wash Total			8.30	3.93	19,356	0.09	0.26	0.00	4.02	0.00	-	-
Thompson Wash/ San Jose Creek	5217*	5217*	1.02	0.18	137	0.02	0.00	0.02	0.80	-	-	3.17
	5220*	5220*	0.29	0.05	232	0.00	0.01	0.00	0.23	-	0.02	-
	5223*	5223*	1.07	0.13	596	0.00	0.09	0.02	0.83	-	-	-
	5218*	5218*	4.98	1.02	3,873	0.22	0.30	0.05	3.39	-	0.66	0.35
	5221*	5221*	0.00	-	-	-	-	-	0.00	-	-	-
San Jose Creek Total			7.34	1.37	4,838	0.25	0.39	0.09	5.25	-	0.68	3.51
Walnut Creek	5397*	5397*	1.25	0.36	2,726	0.02	0.05	0.00	0.83	-	-	-
	5399*	5399*	2.59	0.50	422	0.00	0.00	0.01	2.08	-	-	11.66
	5398*	5398*	1.34	0.35	1,316	0.03	0.05	0.01	0.90	-	0.29	-
Walnut Creek Total			5.19	1.21	4,464	0.05	0.10	0.01	3.81	-	0.29	11.66
Puddingstone	5400*	5400*	13.88	4.09	20,170	1.01	0.52	0.16	8.09	-	1.00	7.32
	5402	5402	6.87	1.19	4,688	0.19	0.15	0.06	5.29	-	0.77	0.17
	5405*	5405*	19.27	5.69	25,206	0.20	1.02	0.28	12.09	-	-	-
	5407	5407	5.97	1.62	6,897	2.26	0.14	0.06	1.89	-	-	-
	5408*	5408*	6.39	1.12	5,003	0.12	0.45	0.10	4.60	-	-	-
	5410*	5410*	16.67	4.90	22,611	1.78	0.83	0.11	9.04	-	1.91	2.30
	5401	5401	11.06	5.20	25,679	0.28	0.42	-	5.16	-	-	-
	5403*	5403*	5.93	2.38	12,133	0.07	0.21	0.04	3.22	-	-	-
	5404	5404	6.98	2.28	10,126	0.46	0.36	0.08	3.80	-	-	-
	5406	5406	7.26	2.27	11,373	0.13	0.18	0.00	4.68	-	-	-
	5409*	5409*	0.22	0.11	1,027	0.00	0.01	-	0.09	-	-	-
	5411*	5411*	5.54	1.80	8,344	0.01	0.32	0.09	3.32	-	-	1.08
Puddingstone Total			106.05	32.65	153,256	6.53	4.60	0.98	61.29	-	3.68	10.86
Grand Total			126.88	39.16	181,915	6.91	5.35	1.08	74.37	0.00	4.64	26.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-12– San Dimas Design Final Compliance Targets and Initial WMP Implementation Scenario

				IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
			COMPLIANCE TARGET:	DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
Receiving Water	Grouped SWS ID*	Individual SWS ID	85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	0.49	0.06	574	0.13	0.01	-	-	0.29	-	-
	5464	5464	3.76	1.50	9,025	0.23	0.13	0.03	1.86	-	0.83	-
	5465	5465	5.30	1.32	5,325	-	0.16	0.04	3.79	-	3.19	0.61
	5466	5466	6.10	2.50	15,331	0.22	0.23	0.12	3.04	-	-	-
	5468*	5468*	4.46	1.75	8,319	0.06	0.09	0.00	2.57	-	0.05	0.24
	5467	5467	0.95	0.02	116	0.39	0.01	0.00	-	0.54	-	-
San Dimas Wash Total			21.07	7.15	38,691	1.03	0.62	0.19	11.26	0.83	4.07	0.86
Thompson Wash/ San Jose Creek	to 5208*	5208	0.13	0.00	13	0.00	0.00	0.00	-	0.12	0.88	-
		5209	1.53	0.02	123	0.01	0.09	0.02	1.39	-	3.06	-
		5210	0.26	0.00	-	0.17	-	-	-	0.10	0.11	-
		to 5208* Total	1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
San Jose Creek Total			1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
Walnut Creek	5387	5387	0.81	0.26	1,182	-	0.07	0.02	0.46	-	-	-
	5390	5390	3.56	1.66	7,505	0.32	0.15	0.04	1.39	-	0.13	-
	5393	5393	0.01	-	-	-	0.00	-	-	0.01	-	-
	5394	5394	0.00	-	-	-	-	-	0.00	-	-	-
	5395	5395	20.98	3.07	15,544	0.08	0.76	0.08	16.98	-	0.13	-
	5397*	5397*	14.58	1.99	8,140	1.45	0.42	0.26	10.45	-	2.86	0.46
	5399*	5399*	2.54	0.12	539	0.66	0.04	0.04	-	1.70	1.71	0.00
	5396	5396	39.92	11.77	50,697	2.73	1.42	0.83	23.18	-	2.75	0.32
	5398*	5398*	18.68	6.52	27,599	1.29	0.81	0.28	9.77	-	0.27	-
Walnut Creek Total			101.08	25.39	111,206	6.53	3.67	1.55	62.23	1.71	7.85	0.77
Puddingstone	5400*	5400*	0.00	-	-	0.00	-	-	0.00	-	-	-
	5410*	5410*	0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
	5411*	5411*	0.00	-	-	0.00	0.00	0.00	0.00	-	-	-
Puddingstone Total			0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
Big Dalton Wash	5481	5481	1.42	0.54	2,986	0.32	0.06	0.01	0.49	-	-	-
	5482	5482	0.50	0.07	451	0.00	0.03	0.01	-	0.39	-	-
	5484	5484	0.00	-	-	-	-	-	-	0.00	-	-
	5489	5489	0.00	-	-	-	-	-	-	0.00	-	-
Big Dalton Wash Total			1.92	0.61	3,437	0.32	0.09	0.02	0.49	0.39	-	-
Grand Total			126.89	33.44	154,716	8.44	4.50	1.78	75.58	3.15	15.97	1.63

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-13– Pomona Final Compliance Targets and Initial WMP Implementation Scenario

				IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
Receiving Water	**Grouped SWS ID***	**Individual SWS ID**	**COMPLIANCE TARGET:** **85th Percentile, 24-hour Storm Volume to be Retained by MS4** (acre-ft)	Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5207	5207	0.00	-	-	0.00	-	-	-	0.00	-	0.04
	5211	5211	0.02	-	-	0.00	-	-	-	0.02	-	-
	5212	5212	0.87	0.03	166	0.11	0.02	0.01	0.70	-	1.12	-
	5213	5213	24.98	2.45	8,240	5.78	0.42	2.35	13.98	-	3.15	3.19
	5214	5214	22.61	8.44	35,542	1.48	0.73	3.06	8.90	-	2.71	0.76
	5215	5215	37.41	8.70	34,802	0.88	1.04	6.14	20.64	-	4.29	0.85
	5217*	5217*	8.22	2.42	48,744	0.71	0.26	0.40	4.43	-	0.11	29.85
	5220*	5220*	10.16	2.76	9,684	0.26	0.37	1.82	4.95	-	0.81	0.62
	5223*	5223*	0.39	0.11	710	0.02	0.03	0.15	0.07	-	-	-
	to 5208*	5208	5.49	0.99	4,452	0.87	0.47	1.76	1.40	-	1.29	5.09
		5209	7.78	1.90	7,949	0.56	0.19	0.97	4.17	-	5.64	0.51
		5210	25.09	7.52	38,068	2.86	1.10	3.22	10.39	-	6.54	0.12
		to 5208* Total	38.36	10.40	50,469	4.30	1.76	5.95	15.96	-	13.47	5.72
	5216*	5216*	34.15	12.19	56,820	3.14	1.31	4.67	12.83	-	1.01	-
	5218*	5218*	0.10	-	-	-	-	-	0.10	-	-	-
	5219	5219	13.12	3.43	10,638	0.17	0.21	1.40	7.92	-	0.96	-
	5221*	5221*	4.26	0.80	3,395	-	0.17	1.56	1.73	-	-	-
	5222*	5222*	9.99	4.15	19,490	0.48	0.39	1.53	3.44	-	-	-
San Jose Creek Total			204.64	55.88	278,700	17.33	6.71	29.04	95.66	0.02	27.63	41.03
Walnut Creek	5399*	5399*	0.11	-	-	0.08	-	-	-	0.03	0.00	-
Walnut Creek Total			0.11	-	-	0.08	-	-	-	0.03	0.00	-
Puddingstone	5408*	5408*	0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
	5403*	5403*	0.00	0.00	0	-	-	0.00	0.00	-	-	-
Puddingstone Total			0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
Grand Total			204.91	55.89	278,717	17.41	6.71	29.06	95.79	0.06	27.64	41.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-14– Claremont Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT — DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM: Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	NON-MS4 RUNOFF: Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5223*	5223*	2.90	1.70	9,186	0.04	0.11	0.03	1.02	-	0.03	-
	5216*	5216*	12.69	3.10	10,684	0.17	0.62	1.60	7.20	-	0.78	-
	5221*	5221*	26.52	10.98	49,192	3.02	1.05	1.61	9.86	-	3.06	-
	5222*	5222*	11.82	4.76	20,932	0.83	0.50	0.54	5.19	-	-	-
	5224	5224	7.32	0.98	5,319	0.23	0.30	0.38	-	5.42	0.00	-
	5225	5225	22.23	10.81	53,058	0.75	0.71	0.13	9.82	-	0.46	-
San Jose Creek Total			83.48	32.34	148,371	5.04	3.29	4.30	33.09	5.42	4.34	-
Puddingstone	5405*	5405*	0.00	-	-	-	0.00	0.00	0.00	-	-	-
	5408*	5408*	1.69	0.16	302	0.01	0.01	0.01	1.51	-	-	-
	5409*	5409*	0.00	-	-	0.00	-	-	-	0.00	-	-
Puddingstone Total			1.70	0.16	302	0.01	0.01	0.01	1.51	0.00	-	-
Grand Total			**85.18**	32.49	**148,673**	**5.05**	**3.30**	**4.31**	34.60	5.42	**4.34**	**-**

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Figure 5-21
ROW BMP Volume Reduction for Initial WMP Scenario to Achieve Final Compliance Targets

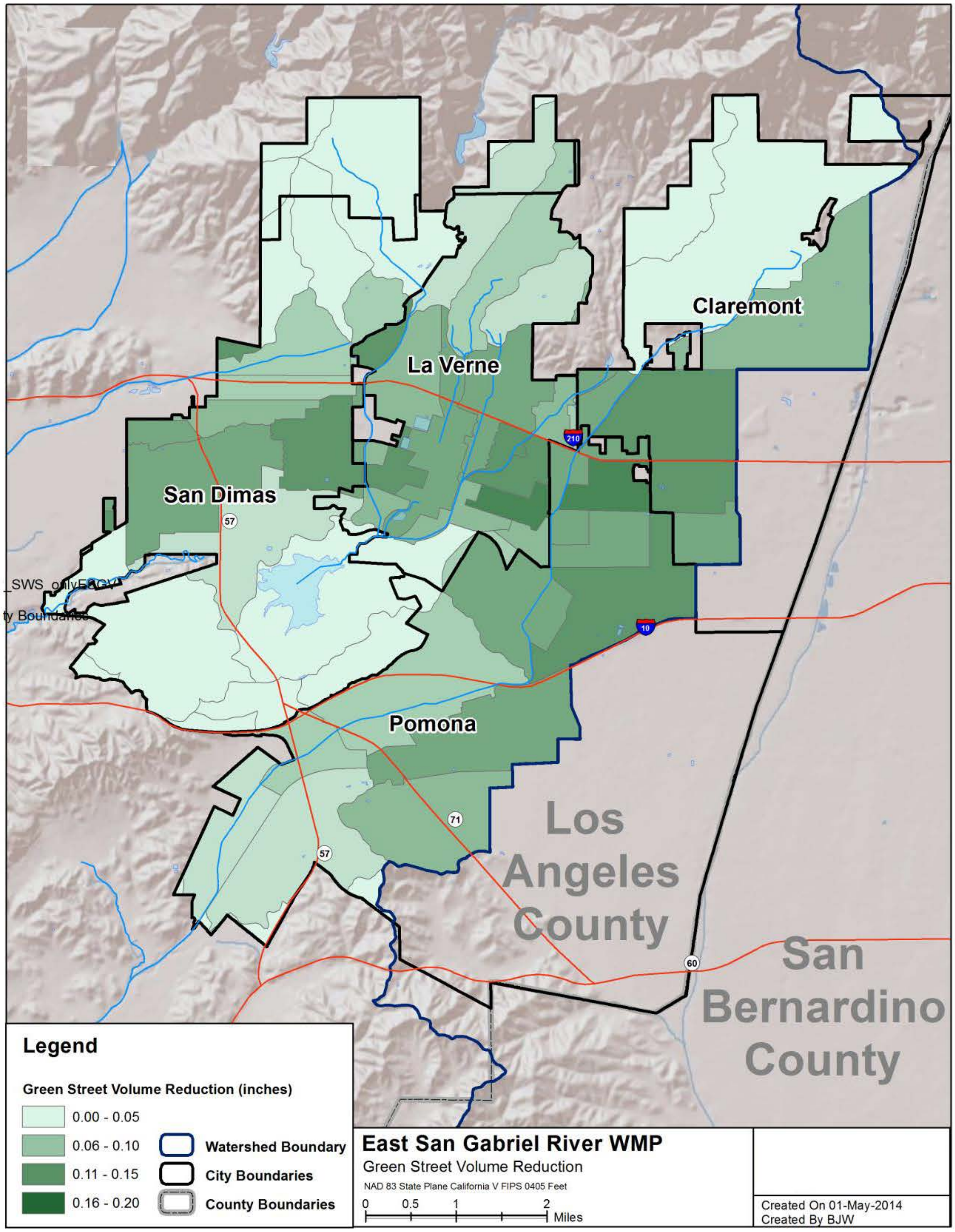
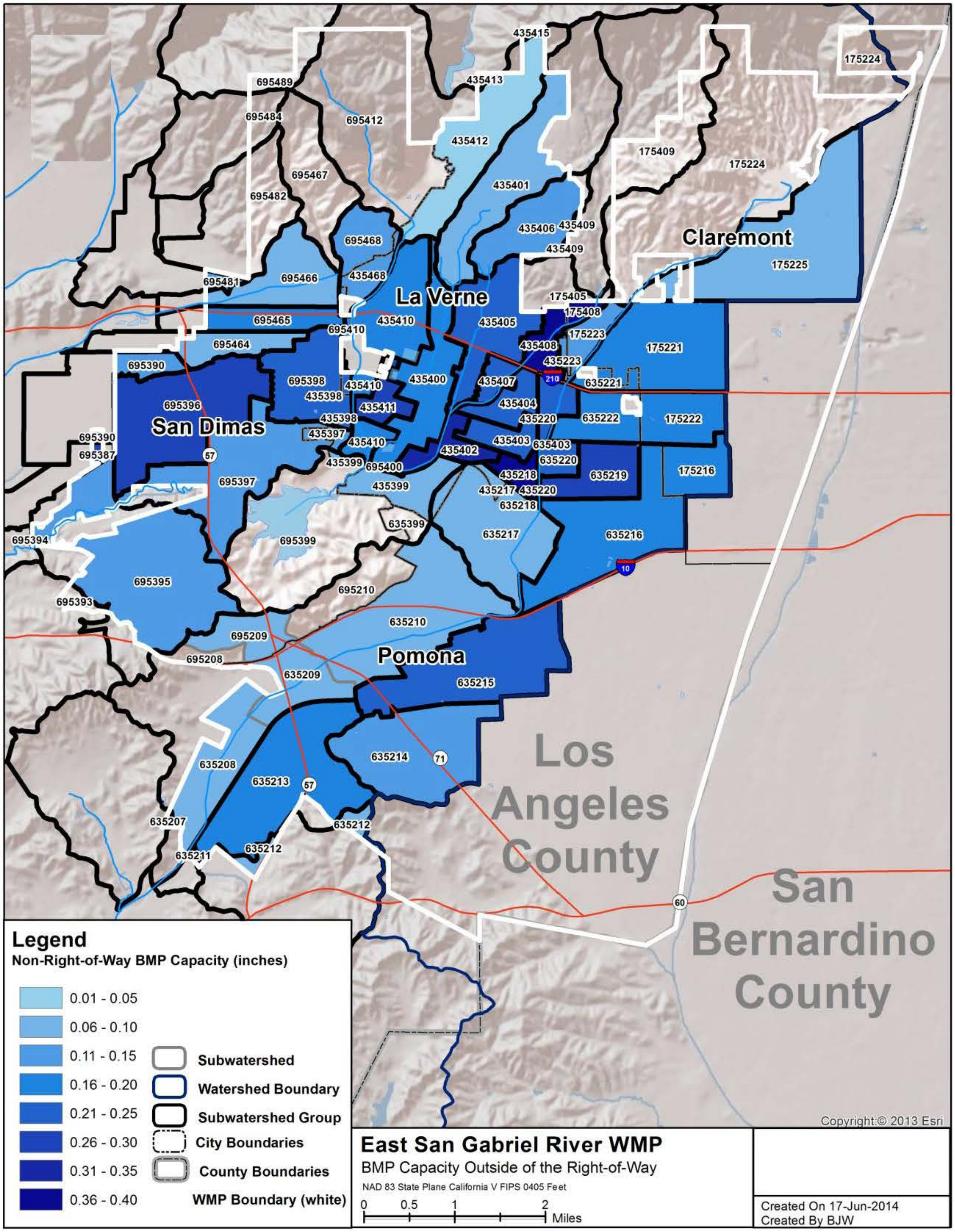


Figure 5-22
BMP Capacity Outside of the Right-of-Way for Initial WMP Scenario to Achieve Final Compliance Targets



5.3 COMPLIANCE TARGETS AND CONTROL MEASURES FOR ATTAINMENT OF INTERIM MILESTONES

The Permit prescribes that scheduling of multiple pollutants within the WMP should consider whether "class" of the non-TMDL pollutants are similar to TMDL pollutants, where class considers pollutant fate and transport, control measures, and BMP implementation timeline. For the design storm approach, achievement of the non-stormwater and stormwater retention goals represents compliance with all TMDL classes and pollutants. As such, attainment of the design storm volumes to address the San Gabriel River Metals TMDL will also address the other TMDLs in the watershed (Category 1 WQ Priorities), the 303(d) listings in the WMP area (Category 2 WQ Priorities) and Category 3 WQ Priorities in the WMP area.

To establish BMP scheduling for the WMP, the percent milestones of the San Gabriel River Metals TMDL were applied directly to the design storm volumes. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. Implementation of BMP capacities on the schedule listed in **Table 5-12** represents compliance with all RWLs and WQBELs of the Permit. As part of the adaptive management process, capacities will be modified based on monitoring through the CIMP for the WMP area. Annual reporting by each jurisdiction will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets in **Table 5-13.** During adaptive management, these capacities may be reduced if monitoring data suggest that water quality conditions are better than assumed when the RAA herein was developed. Because the 10% milestone falls within the current Permit term, it is described in more detail below.

Note that the design storm target also addresses dry weather milestones because non-stormwater is also retained. As described in Section 5.1.4, required dry weather reductions for metals are very low and implementation of control measures to achieve wet weather milestones has reasonable assurance of also attaining dry weather milestones. For bacteria, the scheduling of implementation for the wet weather milestones of metals TMDL will be used as the schedule for dry weather bacteria compliance (10% milestone in 2017, 35% milestone in 2020, 65% milestone in 2023 and final compliance by 2026). Attainment of the dry weather bacteria TMDL by 2026, within 12 years, is well within the timeline provided for other bacteria TMDLs. The LA River Bacteria TMDL provided a 25-year dry weather compliance schedule.

Table 5-15
Schedule of Total Maximum Daily Loads and Milestones for the ESGV Group WMP

TMDL	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestone (Bolded numbers indicated milestone deadlines within the current Permit term) [1]													
			2012	**2013**	**2014**	**2015**	**2016**	2017	2020	2023	2024	2026	2028	2030	2032	2036
San Gabriel River Metals	% of MS4 area Meets WQBELs	Dry						30%	70%	100%						
		Wet						10%	35%	65%		100%				
Los Angeles/ Long Beach Harbors Toxics	Meet WQBELs	All	12/28												3/23	
			Interim												Final	
Puddingstone Reservoir Nutrients, Mercury, and Toxics	Meet WLAs	All	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in the WMP.													

[1] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.

Table 5-16
Schedule of Control Measures and BMP Capacities to Interim Milestones for the ESGV WMP

<table>
<tr><th>Jurisdiction</th><th>Major Watershed</th><th>10% Milestone, Year 2017 (acre-ft)</th><th>35% Milestone, Year 2020 (acre-ft)</th><th>65% Milestone, Year 2023 (acre-ft)</th><th>100% Milestone, Year 2026 (acre-ft)</th></tr>
<tr><td rowspan="3">Claremont</td><td>Puddingstone</td><td rowspan="18">See description in Section 5.3

1. Implementation of Rooftop Runoff Reduction Program
2. LID due to new and re-development
3. Increased construction site inspections
3. Verification of post-construction BMPs
4. Increased catch basin cleaning</td><td>0.6</td><td>1.1</td><td>1.7</td></tr>
<tr><td>San Jose Creek</td><td>29.2</td><td>54.3</td><td>83.5</td></tr>
<tr><td>Claremont Total</td><td>29.8</td><td>55.4</td><td>85.2</td></tr>
<tr><td rowspan="5">La Verne</td><td>Puddingstone</td><td>37.1</td><td>68.9</td><td>106.1</td></tr>
<tr><td>San Dimas Wash</td><td>2.9</td><td>5.4</td><td>8.3</td></tr>
<tr><td>San Jose Creek</td><td>2.6</td><td>4.8</td><td>7.3</td></tr>
<tr><td>Walnut Creek</td><td>1.8</td><td>3.4</td><td>5.2</td></tr>
<tr><td>La Verne Total</td><td>44.4</td><td>82.5</td><td>126.9</td></tr>
<tr><td rowspan="4">Pomona</td><td>Puddingstone</td><td>0.1</td><td>0.1</td><td>0.2</td></tr>
<tr><td>San Jose Creek</td><td>71.6</td><td>133.0</td><td>204.6</td></tr>
<tr><td>Walnut Creek</td><td>0.0</td><td>0.1</td><td>0.1</td></tr>
<tr><td>Pomona Total</td><td>71.7</td><td>133.2</td><td>204.9</td></tr>
<tr><td rowspan="6">San Dimas</td><td>Big Dalton Wash</td><td>0.7</td><td>1.2</td><td>1.9</td></tr>
<tr><td>Puddingstone</td><td>0.3</td><td>0.6</td><td>0.9</td></tr>
<tr><td>San Dimas Wash</td><td>7.4</td><td>13.7</td><td>21.1</td></tr>
<tr><td>San Jose Creek</td><td>0.7</td><td>1.2</td><td>1.9</td></tr>
<tr><td>Walnut Creek</td><td>35.4</td><td>65.7</td><td>101.1</td></tr>
<tr><td>San Dimas Total</td><td>44.4</td><td>82.5</td><td>126.9</td></tr>
<tr><td colspan="3">Total</td><td>190.3</td><td>353.5</td><td>543.9</td></tr>
</table>

5.3.1 Attainment of the 10% Milestone for the ESGV WMP

The 10% milestone for the San Gabriel River Metals TMDL requires that 10% of the WMP area be in compliance with applicable final metals RWLs and WQBELs. For application of the milestone to the entire WMP area for all water quality priorities, the milestone is interpreted to mean that 10% of the *required load reductions* are achieved by each jurisdiction (this interpretation is also consistent with other metals TMDLs). This interpretation means the 10% milestone may equate to less than an actual 10% reduction. For example, if the final required load reduction of the limiting pollutant was 70%, then the 10% milestone represents a 7% reduction. For the ESGV WMP, the limiting pollutant is likely zinc, which has required reductions of 60-70% in other areas/reaches for the San Gabriel River Metals TMDL. As such, it is expected the 10% milestone for the ESGV WMP represents a 7% reduction or less.

A series of control measures have been identified by the Group to achieve compliance with the 10% milestone, as shown in **Table 5-14**. All of these control measures represent *enhanced BMP implementation* from the baseline condition that existed prior to the 2012 Permit. A highlight of the suite of control measures for the 10% milestone is a Rooftop Runoff Reduction Program (Program), which will seek to incentivize control measures on private property to capture rooftop runoff prior to discharge to the MS4. The Program will emphasize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source. While the program will provide an important vehicle for educating the public on the need to retain stormwater runoff, the program will also be designed such that volume reductions are quantifiable and trackable. A detailed schedule for implementation of the Program is shown in **Figure 5-19**. Additionally, other control measures identified for attainment of the 10% milestone are related to MCM requirements that increased in the current Permit (compared to previous Permit) including LID due to new/redevelopment, increased construction site inspections, verification of post-construction BMPs and increased catch basin cleaning. All of these measures have been shown to demonstrate load reduction in a watershed.

During adaptive management, if the 10% milestone is not attained in 2017, then the Group will develop alternate institutional controls or additional structural controls as necessary.

Table 5-17
Control Measures to be Implemented for Attainment of 10% Milestone

BMP Type	Description of Control Measure/ Enhancement from Baseline
Planned or Recently Constructed BMPs within Permit Term	See **Table 4-2** for list of planned or recently constructed projects within the ESGV Group area.
Rooftop Runoff Reduction	Implement an incentive program for private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection, rain barrel deployment and other BMPs as needed (see **Table 5-15**).
LID due to new/redevelopment	The ESGV jurisdictions have reported 2 to 3 parcels per year being subject to LID requirements in recent years. By 2017, this represents an estimated 32 to 48 additional parcels being subject to LID retention standards based on the 85^{th} percentile storm.
Enhanced Construction Site Inspections	The previous permit (Part 4.E.2.b) required a minimum of one construction site inspection during the wet season. The new permit (Part VI.D.8.j) requires a minimum of three construction inspections for each construction project: prior to land disturbance, during active construction, during final landscaping/site stabilization. In addition, the new permit states that construction sites larger than 1 acre shall be inspected (1) when two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA, (2) within 48-hours of a ½-inch rain event, and (3) at least once every two weeks. If the construction site is not deemed a significant threat to water quality and does not discharge to a tributary listed by the state as an impaired water for sediment or turbidity under the CWA §303(d), the new permit states that inspection frequency shall be at least monthly.
Verification of Post Construction BMPs	The previous permit (Part 4.D.8) indicated that verification of post-construction (SUSMP) BMPs included, at a minimum, written conditions which assign responsibility to a developer, public entity, or Home Owners Association to conduct maintenance on post-construction BMPs at least once a year. The new permit (Part VI.D.7.d.iv) expands on these requirements by requiring each permittee to implement a tracking system and inspection and enforcement program for post-construction BMPs. The new permit requires the development of a post-construction BMP maintenance inspection checklist and requires inspection at least once every 2 years after project completion.
Enhanced Catch Basin Cleaning	The new permit (Part VI.D.9. h.vii) requires that the Permittee shall install trash excluders, or equivalent devices, on or in catch basins or outfalls to prevent the discharge of trash to the MS4 or receiving water no later than four years after the effective date of the new Permit.

Table 5-18
Schedule for Implementation of the Rooftop Runoff Reduction Program

Achievement	Completion Date
Develop draft Rooftop Runoff Program including the source control BMPs to be incentivized. The effort will collect estimates the proportion of current parcels (by land use type) with downspouts directly plumbed into MS4 collection system. The program will also evaluate the feasibility of implementation on municipally-owned parcels.	July 2015
Begin outreach program to incentivize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source.	December 2015
Revised draft Rooftop Runoff Program, if necessary, based on lessons learned during initial implementation period.	July 2016
Quantify and report estimate volume reduction from implemented downspout disconnects and rain barrel deployment.	January 2017

5.4 SPATIAL BMP SEQUENCING FOR EFFECIENT IMPLEMENTATION

The WMMS model is a powerful tool to support BMP implementation. The WMMS was used to support efficient *spatial* BMP sequencing (i.e., watershed areas to prioritize for early implementation actions), based on the cost-effectiveness of implemented control measures subwatershed-by-subwatershed. Through adaptive management the sequencing of BMPs will be refined with additional data provided by the CIMP and other lessons learned. Prescribing sequencing is challenging because BMP implementation over space will also be driven by other factors, including already-scheduled capital improvement projects (e.g., street improvements), public perception issues, and political needs. Continuous simulation and optimization were used to evaluate the pollutant removal effectiveness of the proposed BMPs in each subwatershed. The variables that influence BMP effectiveness include the combination of pollutant generating land uses in the watershed, proximity to receiving waters, imperviousness, and BMP infiltration capacity. The metric that was used to "rank" subwatersheds for each jurisdiction was model-predicted BMP construction cost per pound of pollutant load removed, which can be used as a planning-level approximation of "BMP efficiency". This type of sequencing is intended to promote significant early improvements in water quality.

As shown in **Figure 5-23**, the prioritization process involved grouping the subwatersheds into three tiers for each jurisdiction:

- **Tier 1:** Represents the watershed runoff volumes necessary to meet the 35 percent interim milestone in 2020, based on the highest-ranked subwatersheds
- **Tier 2:** Represents the watershed runoff volumes necessary to meet the 65 percent interim milestone in 2023, based on the next highest-ranked subwatersheds
- **Tier 3:** Represents the watershed runoff volumes necessary to meet the 100 percent interim milestone in 2026, based on the lowest-ranked subwatersheds.

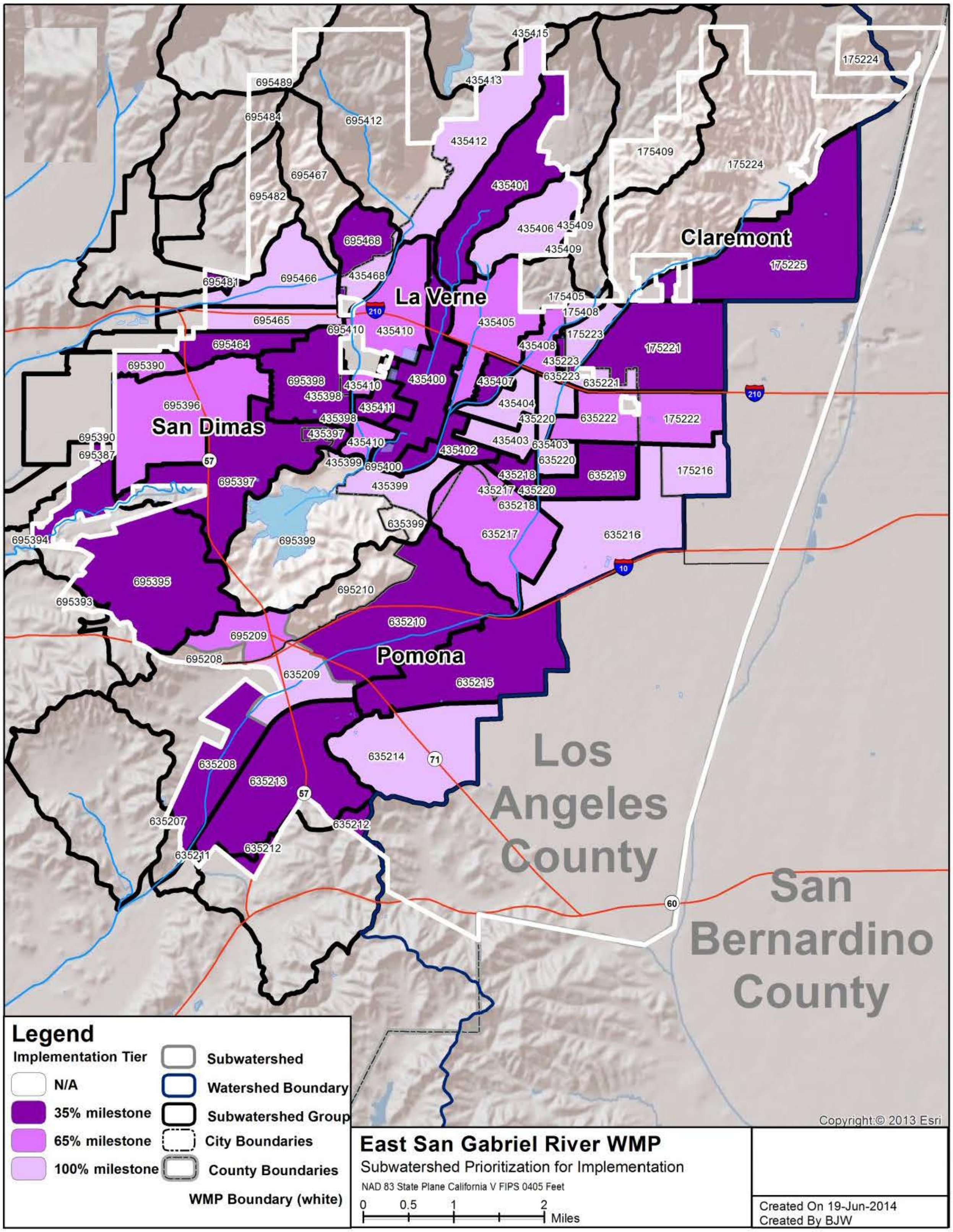
These tiers were developed to help individual jurisdictions focus on areas with the highest likelihood of BMP performance success. Detailed maps and tables of each subwatershed for individual jurisdictions are provided in **Appendix B**. It should be noted that watersheds with runoff that largely originated from open space were excluded from the efficiency analysis and are labeled as “N/A” on these maps and tables, as BMP implementation for open space runoff is not a goal of this WMP.

Although this efficiency analysis provides a planning-level framework to guide implementation to meet the Permit deadlines, a more detailed retention strategy will be necessary for each jurisdiction to successfully manage and document the WMP implementation process. A comprehensive retention plan might include the following elements:

- Standard BMP design templates and/or guidance
- Detailed identification of high priority areas (i.e., cross streets) for green street retrofits
- Detailed evaluation of public parcels available for regional BMPs implementation
- Process for linking BMP retrofits to planned capital improvement projects
- Tracking tools for BMP locations, size, type, and drainage area

Ultimately, by tracking the progress of the program, adaptive management strategies can be employed to refine the assumptions of this analysis and hopefully be used to streamline the implementation process and reduce the overall burden of compliance.

Figure 5-23
Prioritization of BMP Implementation by Subwatershed



6 Implementation Process

The WMP describes the level and types of BMP implementation that will result in attainment of the RWLs and WQBELs of the Permit. The 85th percentile, 24-hour "design storm" volume was used by the RAA to calculate the necessary BMP capacities in each subwatershed in the WMP area. The design storm analysis provides an integrated approach to address all pollutants and all TMDLs regulated by the Permit. Based on this analysis, the networks of BMPs needed to attain the RWLs and WQBELs is extensive. Even if all available and suitable ROWs in the WMP area are retrofitted with bioretention / green streets, that capacity is insufficient to meet the design storm targets. The additional BMP capacity would be achieved with BMPs outside of the ROW (non-ROW BMPs), with options including both regional BMPs (infiltration basins) and distributed BMPs (green infrastructure on private parcels through the LID ordinances, green infrastructure on public parcels, downspout disconnection programs, etc.). The WMP describes how the BMPs may be implemented spatially in a more cost-effective manner to achieve the largest improvements in water quality as early as possible in the implementation schedule (i.e., which subwatersheds should be targeted first).

Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of the BMP implementation effort. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

6.1 ESTIMATED COST OF IMPLEMENTATION

The level of effort and funding needed to implement the BMPs identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these budget increases will not be possible.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

An order-of-magnitude cost estimate was developed, based on required capacity to achieve full compliance through implementation of structural and non-structural BMPs. The order-of-magnitude cost estimate for implementation of the WMP is shown in **Table 6-1**. It is important to note that these estimates are provided as order-of-magnitude cost estimates for planning level purposes. Actual expenditures will vary depending on the nature of implementation of the WMP.

6.1.1 Assumptions for Cost Estimate

For planning purposes, cost estimates for implementation of control measures within the WMP area have been developed. There are a variety factors that cause uncertainty in these cost estimates, including:

- The paucity of existing water quality monitoring data in the WMP area, the extent to which control measures will need to be implemented for permit compliance is uncertain.
- Site-specific information on costs of various control measures is not available. Costs have been estimated based on projects in other areas.
- Information regarding long-term operation and maintenance costs of various control measures is sparse.

Cost estimates provided herein will be updated during the adaptive management process as more information becomes available. Notwithstanding the uncertainties listed above, the cost estimates presented here are considered to be accurate on an order of magnitude scale, based on assumptions described below:

1. The low estimate assumes regional BMPs on public land only and a suite of lower cost LID BMPs. The high estimate assumes land acquisition is required to construct regional BMPs and a suite of higher cost LID BMPs.
2. The cost of administering a downspout disconnection program is based on data provided by the City of Portland's Downspout Disconnection Program website (Portland, 2014). The cost estimate of the program used a $53 per household rebate. The estimate uses an assumption of 10% of all households in the ESGV Group Cities to participate in the program over the next 5 years.
3. The cost estimate to administer a LID Ordinance of New/Redevelopment is based on reported "development planning" costs from the ESGV Group's 2012 Annual Reports (Attachment U-4).
4. Regional BMP cost estimates are based on planning-level cost estimates provided in the 2010 "Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed" (Los Angeles, 2010). Actual costs of regional BMPs will vary depending of number of BMPs constructed, cost of land acquisition, BMP type, and constructability factors.
5. The estimated costs of LID on public parcels are based on data provided from The Journal for Surface Water Quality Professionals (Grey, 2013).

Table 6-1
Order-of-Magnitude Cost Estimate of WMP Implementation

Low Estimate				
	Estimated Cumulative Expenditure by WMP Milestone			
Implementation Activity	**2017 (10% milestone)**	**2020 (35% milestone)**	**2023 (65% milestone)**	**2026 (100% milestone)**
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$88,000,000**	**$163,400,000**	**$251,400,000**
Regional BMPs	$ -	$36,300,000	$67,300,000	$103,600,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$6,800,000	$12,600,000	$19,400,000
Total	**$25,091,000**	**$138,553,000**	**$239,246,000**	**$352,579,000**

High Estimate				
	Estimated Cumulative Expenditure by WMP Milestone			
Implementation Activity	**2017 (10% milestone)**	**2020 (35% milestone)**	**2023 (65% milestone)**	**2026 (100% milestone)**
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$190,800,000**	**$354,500,000**	**$545,300,000**
Regional BMPs	$ -	$116,300,000	$216,000,000	$332,300,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$29,600,000	$55,000,000	$84,600,000
Total	**$25,091,000**	**$241,353,000**	**$430,346,000**	**$646,479,000**

6.2 ADAPTIVE MANAGEMENT PROCESS

As new program elements are implemented and information is gathered over time, the WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to address changing conditions. The adaptive management process includes a re-evaluation of water quality priorities, an updated source assessment, an effectiveness assessment of watershed control measures, and a RAA. The CIMP will gather additional data on receiving water conditions and stormwater/non-stormwater quality to inform these analyses. This process will be repeated every two years as part of the adaptive management process.

6.2.1 Re-characterization of Water Quality Priorities

Water quality within the WMP area will be re-characterized using data collected as a result of the CIMP implementation to include the most recent data available. WBPCs may be updated as a result of changing water quality. These classifications will be important for refocusing improvement efforts and informing the selection of future watershed control measures.

6.2.2 Source Assessment Re-evaluation

The assessment of possible sources of water quality constituents will be re-evaluated based on new information from the CIMP implementation efforts. The identification of non-MS4 and MS4 pollutant sources is an essential component of the WMP because it determines whether the source can be controlled by watershed control measures. As further monitoring is conducted and potential sources are better understood, the assessment becomes more accurate and informed.

6.2.3 Effectiveness Assessment of Watershed Control Measures

The evaluation of BMP effectiveness is an important part of the adaptive management process and the overall WMP. Implementation of the CIMP can provide a quantitative assessment of structural BMP effectiveness as it relates to actual pollutant load reduction to determine how selected BMPs have performed at addressing established water quality priorities. In addition, the adaptive management process is a required step for the customization of MCMs as detailed in Section 4. Effectiveness assessment becomes important for the selection of future control measures to be considered.

6.2.4 Update of Reasonable Assurance Analysis

The data gathered as a result of the CIMP will support adaptive management at multiple levels, including (1) generating data not previously available to support model updates and (2) tracking improvements in water quality over the course of WMP implementation. As described in Section 5, the RAA is an iterative process that depends on the continuous refinement and calibration of the watershed models used.

6.3 REPORTING

Annual reporting will be completed each year as part of the CIMP. In additional to assessing the overall progress of the WMP, the CIMP reporting will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets. Data obtained through CIMP monitoring will be used to determine the overall effectiveness of the WMP and will the next phases of WMP implementation during the adaptive management process.

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Appendix A

Details on BMP Modeling for Retention of the Design Storm Runoff Volumes

A-1 BMP Capacities to Retain the 85th Percentile Storm

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. This appendix provides details on the modeling approach to quantify the volume reductions by BMPs included in the initial WMP implementation scenario.

A-2 Data Used

To evaluate BMP opportunities and available implementation areas, several key data sets were processed and formatted. **Table 0-1** outlines the data set names, formats, descriptions, and sources.

Table 0-1
Summary of Data

Data Set	Format	Description	Source
Parcels	GIS Shapefile	Outlines property boundaries and sizes	Los Angeles County (LAC) Assessor
Roads	GIS Shapefile	Shows street centerline network & classification by Topologically Integrated Geographic Encoding and Referencing (TIGER)	LAC GIS Portal
Land Use	GIS Shapefile	Subdivides the region into predefined land use categories with similar runoff properties. Each individual land use feature identifies the associated percent impervious coverage.	LAC WMMS Model
Subwatersheds	GIS Shapefile	Defines drainage areas to selected outlet points	LAC WMMS Model
Slopes	GIS Shapefile	Classifies regions by the slope category	LAC WMMS Model
Soils	GIS Shapefile	Outlines spatial extents of dominant soil types	LAC GIS Portal
Jurisdictions	GIS Shapefile	Establishes city and county boundaries	LAC GIS Portal
Drainage Network	GIS Shapefile	Identifies stormwater structure layout and conveyance methods	LAC GIS Portal
Groundwater Contours	GIS Shapefile	Illustrates groundwater depth as measured from the surface	LAC BOS
Soil Runoff Coefficient Curves	PDF File	Curves characterize effect of rainfall intensity on runoff coefficient per soil type	Hydrology Manual Appendix C (LADPW 2006)
Aerial Imagery	Layer File	Orthoimage of entire region	ESRI Maps & Data Imagery
Runoff Rates	Time Series	Hourly runoff for land uses for the design storm distribution and continuous simulation	LAC WMMS Model

A-3 NON-MS4 FACILITY RUNOFF

Each jurisdiction in the Group's WMP area is subject to stormwater runoff from non-MS4 facilities. In particular, Caltrans roads and facilities regulated by nontraditional or general industrial permits contribute to the design storm volume for each subwatershed. It will be important for these entities to retain their runoff and/or eliminate their cause/contribution to receiving water exceedances. The runoff from these non-MS4 facilities was therefore estimated and subtracted from the 85th percentile design storm volume target, as described below.

A-3.1 NON-MS4 PERMITTED AREAS

Non-MS4 permitted areas were identified based on the address list of permittees on the State Water Resources Control Board (SWRCB) website. Using the address information, corresponding parcel areas were selected using the LA County Assessor Parcel Viewer and the associated GIS Shapefile. The percentage of permitted land use area relative to the total land use area was calculated and the associated non-MS4 permitted area runoff as extracted from the WMMS runoff response output.

A-3.2 CALTRANS

The design storm runoff generated by Caltrans facilities was estimated using WMMS land use data. Areas labeled as Transportation consist of freeways and other extensive transportation facilities that tend to fall under Caltrans jurisdiction (versus areas labeled as Secondary Roads, which are managed by local transportation departments); these areas were assumed to be Caltrans facilities. Runoff from Transportation land uses, less runoff from any overlapping non-MS4 permitted areas identified above, was extracted from the WMMS model output for each subwatershed.

A-3.3 SUMMARY OF NON-MS4 FACILITY RUNOFF

Runoff volumes estimated for non-MS4 permitted areas and Caltrans were subtracted from the design storm volume to generate the required MS4 treatment capacity in **Table 0-2**.

Table 0-2
Design Storm Volume from Non-MS4 Facilities

Jurisdiction	Total Design Storm Runoff, ac-ft	Estimated Design Storm Runoff Volume from non-MS4 Permitted Facilities, ac-ft	Estimated Design Storm Runoff Volume from Caltrans, ac-ft	Required MS4 Treatment Capacity, ac-ft
Claremont	89.5	0.0	4.3	85.2
La Verne	157.5	26.0	4.6	126.9
Pomona	273.6	41.0	27.6	204.9
San Dimas	144.5	1.6	16.0	126.9
Total	**665.1**	**68.7**	**52.6**	**543.9**

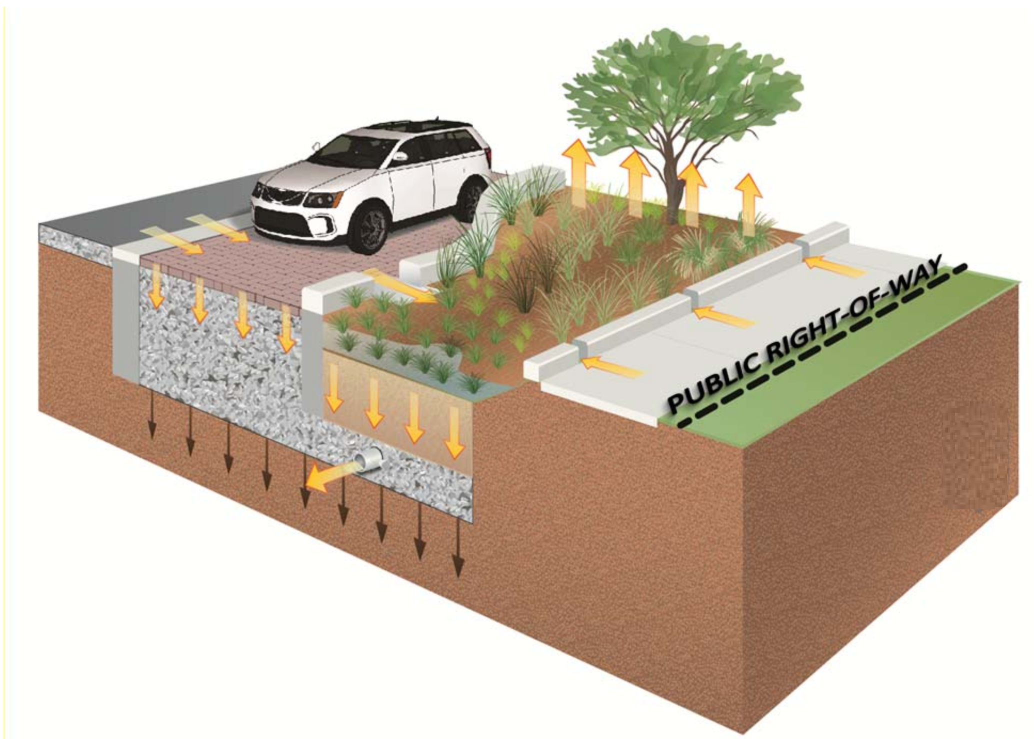
A-3.4 RIGHT-OF-WAY BMP CAPACITY ANALYSIS

In order to highlight the potential structural BMP implementation approaches to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted. In this section, the right-

of-ways were evaluated for opportunities to locate BMPs. The BMP opportunity analysis described in this subsection evaluates the key components that affect the ability of ROW BMP networks to be effective: space available in the ROW, types of BMPs to site in the ROW, drainage areas that could potentially be treated by ROW BMPs, and estimated BMP infiltration rates.

Stormwater BMPs in the ROW are treatment systems arranged linearly within the street ROW and are designed to reduce runoff volumes and improve runoff water quality from the roadway and adjacent parcels. Implementing BMPs in the ROW provides an opportunity to meet water quality goals by locating BMPs in areas owned or controlled by a municipality to avoid the cost of land acquisition or establishing an easement. Implementing BMPs in the ROW allows for direct control of construction, maintenance, and monitoring activities by the responsible jurisdiction. Bioretention and permeable pavement are typically best suited for implementation in the ROW (**Figure 0-1**).

Figure 0-1
Conceptual schematic of ROW BMPs with an underdrain (Arrows indicate water path ways)



Not all roads are suited for ROW BMP retrofits; therefore, screening is required to eliminate roads where ROW BMP retrofits are impractical or infeasible due to physical constraints. While ROW BMP retrofits can be implemented in a variety of settings, the physical characteristics of the road itself such as the road type, local topography, and depth to groundwater can significantly influence the practicality of designing and constructing these features. A screening protocol was established to identify realistic opportunities for retrofits based on the best available GIS data. The opportunities identified during this process provide the foundation for the engineering analysis to determine the volume of stormwater that can be treated by ROW BMP

retrofits in the subject watersheds. This section describes the data and the screening process used to identify the best available roads for ROW BMP retrofits.

A-3.4.1 ROW BMP Screening

High traffic volumes, speed limits, slopes, and groundwater tables, impact the feasibility of ROW BMP implementation. Road classification data contains information typically useful for determining if the street is subject to high traffic volumes and speeds, and Census TIGER road data provides the best available road classification information for the study area. **Table 0-3** shows the Master Address File (MAF)/TIGER Feature Classification Codes (MTFCC) deemed appropriate for ROW BMP retrofit opportunities. Only roads with the MTFCCs listed in **Table 0-3** can be considered for ROW BMP retrofits in this screening analysis. All other roads are screened out.

Table 0-3
ROW BMP MTFCC

MTFCC	Description
S1400	Local neighborhood road, rural road, city street
S1730	Alley
S1780	Parking lot road

In addition to the screening of road types, opportunities were further screened to remove segments that have steep slopes. BMP implementation on streets with grades greater than 10 percent present engineering challenges that substantially reduce the cost effectiveness of the retrofit opportunity. From the available slope information, roads were considered as retrofit opportunities if the slope was less than 10 percent.

The final screen applied to the roads is the depth to groundwater. Implementing ROW BMPs in areas where the groundwater table is high is not recommended due to the fact that the BMPs are rendered ineffective due to their storage capacity being seriously diminished with groundwater inflow. From the groundwater contours provided, roads were eliminated as opportunities if the depth to groundwater was less than 10 feet. Appendix B, Figure B-1 highlights the areas identified with groundwater depths of 10 feet or less. The highlighted areas provide a starting point for elimination, however it should be noted that further evaluation may be necessary based on local knowledge of areas with high groundwater tables or daylighting of perched groundwater layers as identified by the jurisdictions.

The results of the ROW BMP screening are presented in Appendix B. Appendix B shows the roads available for retrofit (highlighted in green) versus all of the roads within the study area. An overall watershed map and individual jurisdictional maps for each watershed show all the identified retrofit opportunities. The maps indicate that a majority of the roads within each jurisdiction pass through the screening as potential retrofits. It should be noted that due to the coarse nature of the road classification data, only freeways, highways, and major roads were eliminated in the classification screening process. In practice, retrofitting every street that passed through the screening will likely not be feasible and adaptive management strategies will be

necessary in the future to further refine the road classification data layer to more accurately identify road types suitable for ROW BMP retrofits.

The screened opportunities were used as the basis to evaluate the potential runoff volume reduction provided by ROW BMP implementations. In the following section, an engineering assessment is presented that determines the ROW BMP contributing drainage areas and the overall volume reductions achieved through ROW BMP implementation.

A-3.4.2 ROW BMP Configuration

The three most important assumptions necessary to evaluate BMP volume reduction performance are (1) the physical BMP configuration assumptions, (2) the contributing drainage area characteristics, and (3) the in-situ soil infiltration rates. By understanding the area draining to the BMPs and the volume capacity and function of the BMPs, an assessment can be performed to evaluate the potential of ROW retrofit BMPs to capture the required runoff volume in each subwatershed. This section summarizes the information and processes used to establish BMP configuration assumptions to be used for the runoff analysis presented in the following section.

A-3.4.3 BMP Assumptions Based on Green Streets

ROW BMPs consists of multiple types and combinations of stormwater treatment options. A well-established and often utilized ROW BMP is green streets. Green streets provide multiple benefits for pollutant and volume reduction and have been implemented in locations throughout the nation In the future and as updates are made to the WMP, other ROW BMPs may be incorporated to achieve the required volume reductions.

Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane. Prior to evaluating green street BMP treatment capacity, it is imperative to establish a configuration that can be assumed for typical implementation watershed-wide. This establishes the parkway space needed for the BMPs (plan view) and also determines the hydraulic function and storage capacity of the subsurface systems.

Bioretention systems are surface and subsurface water filtration systems, which use vegetation and underlying soils to store, filter, and reduce runoff volume while removing pollutants. **Figure 0-2** represents a typical bioretention system incorporated into a green street design. Bioretention systems consist of a ponding depth and engineered soil media depth to treat runoff. **Table 0-4** outlines typical widths, depths, and soil parameters associated with green street bioretention cells. Green streets were assumed to have no underdrains because the WMP emphasizes low impact development and stormwater volume reduction to achieve pollutant load reductions.

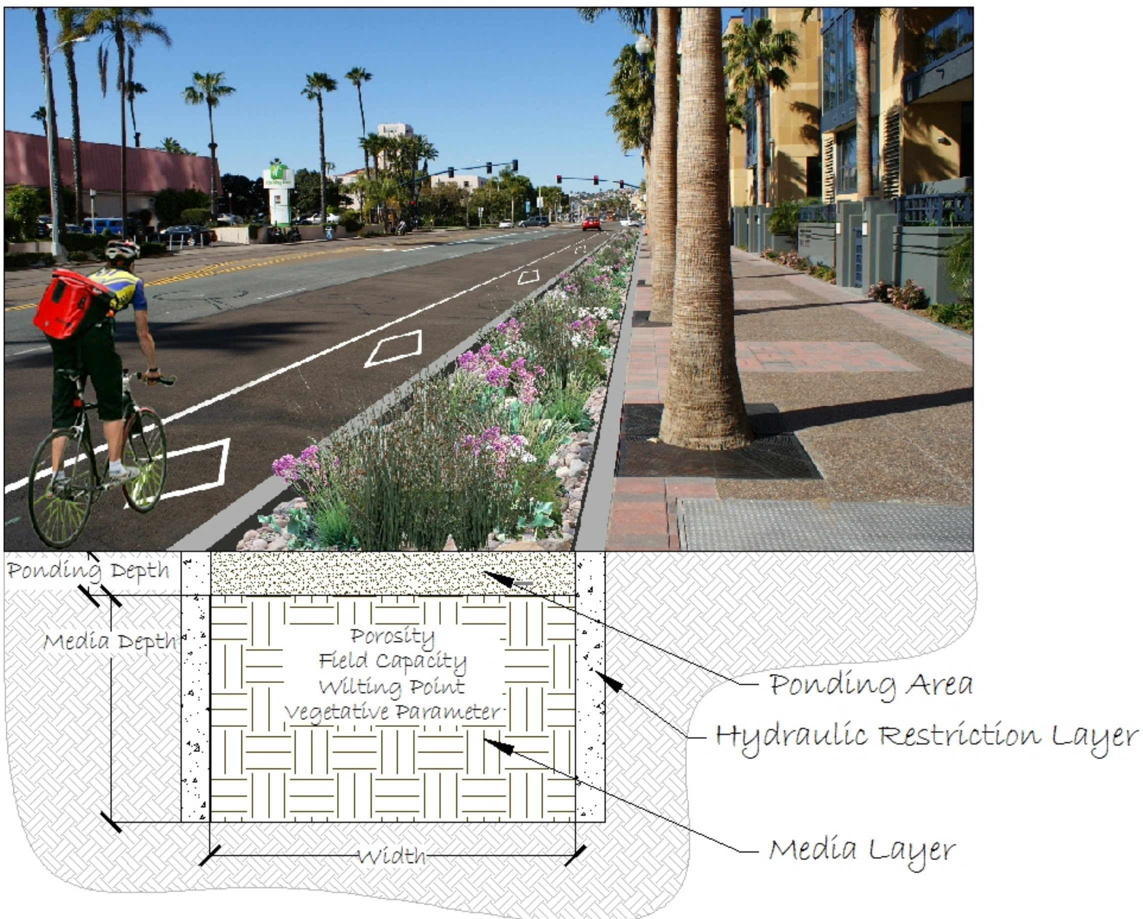
Driveways and utilities limit the road length that can be converted into a green street. From past experience and aerial imagery review in the local watersheds, it was determined that 30 percent of the road length could be considered as the maximum possibility for conversion into bioretention area. This factor was used to limit the total length of potential green street bioretention areas. The parameters outlined above and in the table below were assumed to be the typical green street BMP implementation configuration for the screening analysis and the BMP treatment capacity evaluation described in the next section.

Table 0-4
BMP Design and Modeling Parameters for Subsequent Analyses

Component	Design Parameter	Value
Ponding Area	Depth	0.8 feet
	Width	4.0 feet
Media Layer	Depth	3.0 feet
	Porosity	0.4
Overall Profile	Effective Depth[1]	2.0 feet

[1] Effective depth is the maximum equivalent depth of water stored within the bioretention area less the depth displaced by soil media (vertical summation of surface ponding depth and void storage depth)

Figure 0-2
Typical Bioretention Section View (City of San Diego 2011)

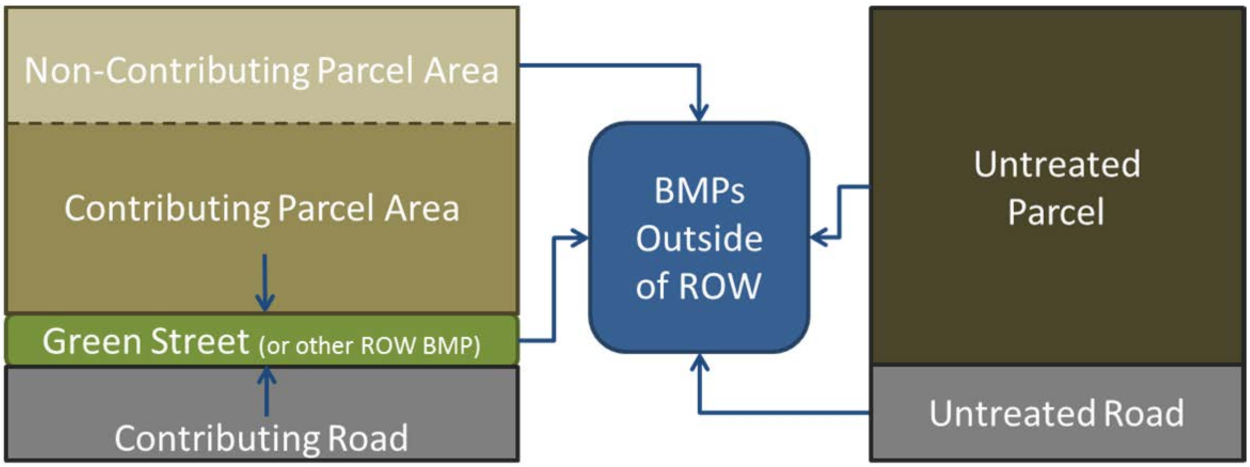


A-3.4.3.1 Contributing Drainage Area Analysis

The purpose of this analysis was to realistically represent the area, type, and impervious coverage of land draining to potential green streets throughout the entire watershed. This is a critical step in WMP development because it predicts what volume of runoff can be assumed treated by green streets and what remaining (untreated) runoff must be routed to regional BMPs

or addressed in other ways. The following engineering analyses were performed at a subwatershed-scale within the limits of available data and resources to estimate the maximum potential green street treatment capacity; given more detailed street-by-street drainage area data, the assumptions and results presented herein could be refined in future efforts to optimize green street treatment capacity. **Figure 0-3** illustrates a simplified routing schematic used to represent the available runoff flow pathways to green street and regional BMPs throughout the watershed. The following subsections explain how each representative drainage area illustrated in **Figure 0-3** was characterized.

Figure 0-3
Green Streets Model Schematic (arrows denote direction of runoff routing; figure not to scale)



A-3.4.3.2 Typical Parcel Size & Street Frontage Analysis

The nature of the green street analysis requires an understanding of typical parcel sizes and how much of the parcel drains to the ROW. Much of the runoff from parcels and the road drains to the ROW and is conveyed downstream through curb, gutter, and pipes. By identifying the typical parcel size, frontage length, and associated road area that drains to a candidate right-of-way area (**Figure 0-4**) the total area draining to potential green street retrofit opportunities was extrapolated throughout the watershed. For purposes of this study, only the high-density residential, multifamily residential, commercial, institutional, and industrial land uses were considered as contributing substantial runoff to the ROW (all other land uses contain minimal impervious area and thus contribute insubstantial runoff to the ROW).

The typical parcel size for each land use was determined by identifying all parcels for each land use. Once all the parcels were selected, the median parcel size for each land use was calculated and tabulated. This method evaluated thousands of parcels throughout the entire watershed and provided the most accurate depiction of the typical parcel size for each land use based on available data. Results are shown in **Table 0-5**.

Each parcel is adjacent to a portion of the ROW where the green street would be implemented. A subset of parcels approximate to the median parcel size for each land use was selected to determine the average frontage length. The portion of the selected parcels that was in contact with the ROW was measured using desktop analysis tools and averaged between all parcels of the same land use. Results are shown in **Table 0-5**.

Road area draining to green streets constitutes a substantial component of the total impervious drainage area. To establish road drainage areas, typical road widths were defined by sampling representative road segments located in each land use. Widths were measured from curb-to-curb using aerial orthoimagery and reported to the nearest even integer. The median sampled road width for each land use was calculated and compared with the City of Los Angeles Standard Street Dimensions (City of Los Angeles Bureau of Engineering 1999) for validation. To predict the resulting contributing road areas, the previously measured frontage length was multiplied by half the road width. Roads were assumed to be crowned; therefore, only half of the width would drain to one side of the road. Results are shown in **Table 0-5**.

As discussed in Section A-3.4.3, only 30 percent of the frontage length could be converted into bioretention area. This factor was multiplied by the frontage length and used in limiting the total length of bioretention available within the model, as presented in **Table 0-5**.

Figure 0-4
Typical Parcel Area, Road Width, Road Area, and Frontage Length Schematic (figure not to scale)

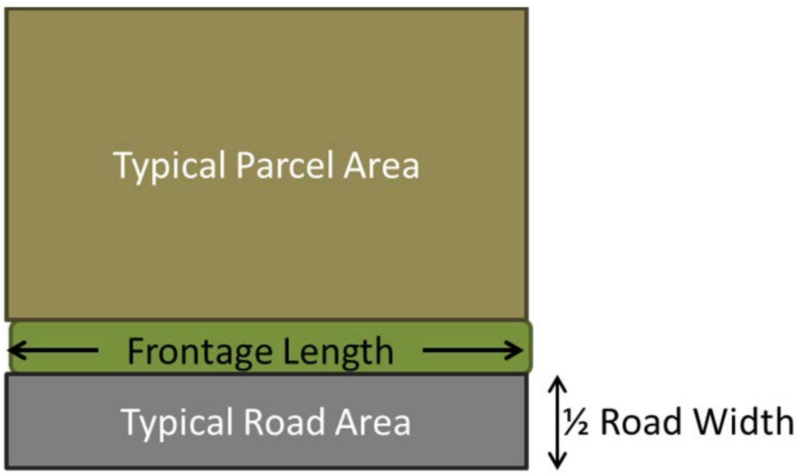


Table 0-5
Typical parcel area, road area, and frontage length

Land Use	Typical Parcel Area, ft^2	Frontage Length, ft	Typical Road Width, ft	Typical Road Area, ft^2	BMP Length, ft
High-density Residential	6,528	57	38	1,083	17
Multifamily Residential	13,526	60	30	900	18
Commercial	12,429	100	63	3,150	30
Institutional	38,215	143	37	2,646	43
Industrial	26,467	117	46	2,691	35
Other Land Use (Open Space, Vacant, etc.)	n/a[1]	100	40	2,000	30

[1] assumed not draining to ROW

A-3.4.3.3 Contributing Parcel Area Analysis

Many parcels will not always entirely drain to the ROW because portions can be retained on-site or flow onto an adjacent property. The actual volume of water that can be treated by a green street BMP was determined by identifying the typical proportion of the parcel that drains to the ROW (as shown in context of the model schematic in **Figure 0-5**). This step also determines the area, and associated runoff, that is *not* expected to drain to green streets and is routed directly to downstream regional facilities or other practices (herein referred to as non-contributing parcel area).

The contributing areas to the green street BMPs were found using random sampling and identifying the surrounding parcel drainage patterns. Parcels were selected using a random number generator and drainage areas were determined on a desktop analysis using topography, aerial imagery, and drainage infrastructure features. The average contributing percentage was identified by evaluating multiple sites. **Table 0-6** shows the percent contributing areas by land use that were determined from this analysis.

The impervious coverage of contributing parcel areas was also characterized during this step so that runoff could be simulated and routed to green streets in each land use. This was performed by tabulating the imperviousness data from the WMMS Model for each individual land use feature. The area-weighted mean impervious coverage was then calculated for each land use type. Results are tabulated for each land use in **Table 0-6**.

Figure 0-5
Parcel Contributing Area to ROW (impervious varies by land use; arrows denote direction of runoff routing; figure not to scale)

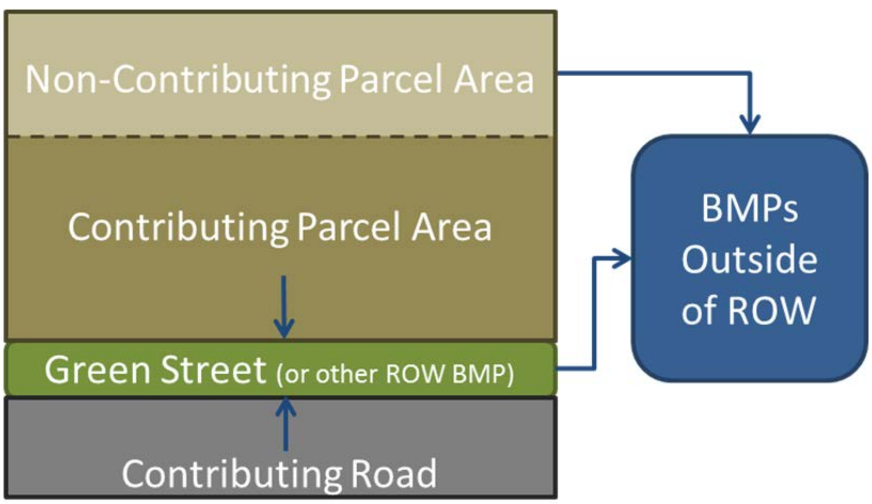


Table 0-6
Contributing area percentage by land use

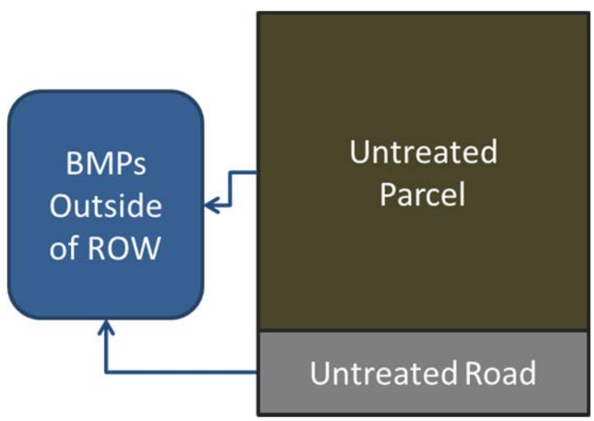
Land Use	Contributing to ROW	Non-contributing to ROW	Percent Impervious
High-density Residential	80%	20%	36%
Multifamily Residential	80%	20%	60%
Commercial	80%	20%	90%
Institutional	80%	20%	72%
Industrial	35%	65%	66%
Other Land Use (Open Space, Vacant, etc.)	0%	100%	n/a

A-3.4.3.4 Untreated Roads Tabulation

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or adjacent to open space or vacant parcels. Untreated road and associated adjacent parcel area that will ultimately drain to other BMPs was tabulated using available GIS data and screening results from Section A-3.4.1 (conceptually illustrated in **Figure 0-6**).

Because green streets are implemented in the linear environment of the transportation corridor, it was assumed that the percentage of parcel area draining to green streets would be proportional to the percentage of suitable roads for green streets (as identified in Section A-3.4.1) in each subwatershed. In other words, parcels associated with unsuitable roads were assumed to bypass green street treatment and routed directly to other facilities (these areas are defined herein as *untreated parcels*). The total treated and untreated parcel areas were reconciled with the total areas of each land use (per subwatershed) in the WMMS Model for validation and consistency.

Figure 0-6
Schematic Depicting Untreated Parcel and Untreated Road Runoff Routing (arrows denote direction of runoff routing; figure not to scale)



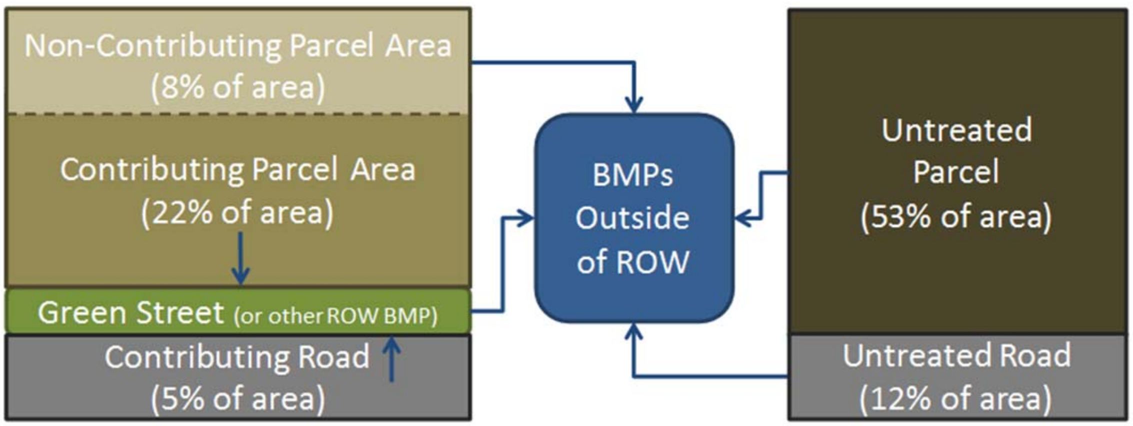
A-3.4.3.5 Summary of Contributing Drainage Areas

Results of the preceding analyses are presented in **Figure 0-7**. Areas that were assumed *un*treated by green streets include unsuitable roads and adjacent parcels, portions of suitable parcels that do not drain to the ROW, and predominantly pervious parcels (Open Space, Vacant, etc.), as discussed in preceding subsections; runoff from these untreated areas is assumed routed

directly to regional facilities. Note that contributing areas are not necessarily proportional to contributing runoff due to variation in impervious coverage; runoff routing resulting from the preceding analyses is presented in the following section.

Given more detailed street-by-street engineering analyses, the potential area treated by green streets could be optimized, but the results below represent realistic estimates based on sound engineering judgment and currently available data and resources. Adaptive management strategies could target specific land uses that tend to bypass green street treatment (e.g. runoff, and associated treatment capacity, generated by industrial areas could be addressed through relevant industrial permits or onsite BMPs). Additional discussion on adaptive management strategies is provided in Section A-4.

Figure 0-7
Schematic Depicting Contributing Area Routing as Percentages of the Total Watershed Area (arrows denote direction of flow; figure not to scale)



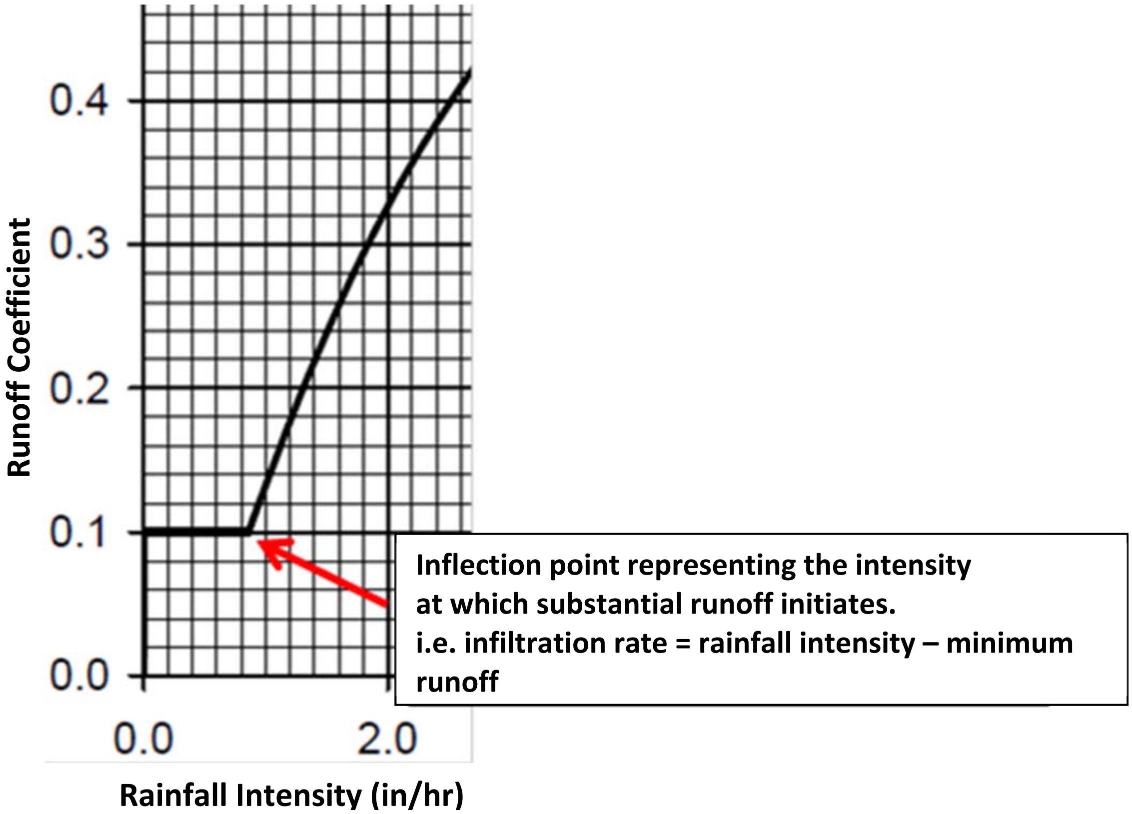
A-3.4.3.6 BMP Infiltration Rates By Subwatershed

The purpose of performing the subwatershed infiltration rate analysis was to assign an average green street BMP infiltration rate to each subwatershed using soils data. Infiltration rates were assigned at the subwatershed level, which is the finest resolution at which the model performs hydrologic and water quality computations.

Soil data coverage provided through the LACDPW categorized soil unit areas into soil types. Runoff coefficient curves reported in the Hydrology Manual were developed by LACDPW for each soil type using double ring infiltrometer tests performed on areas of homogeneous runoff characteristics (LACDPW 2006). LADPW employed a sprinkling-type infiltrometer to perform the tests in each homogeneous area.

Runoff coefficient curves represent the response of the runoff coefficient (defined as the ratio of runoff to rainfall from a land area) to varying rainfall intensities. Each curve displays an inflection point representing the rainfall intensity at which substantial runoff initiates. According to LADPW (2006), each curve was assigned a minimum runoff coefficient of 0.1, “indicating that there is some runoff even at the smallest rainfall intensities.” If it is assumed that substantial runoff initiates when the intensity of rainfall is greater than the soil’s inherent infiltration rate, then the infiltration rate can be assumed equal to the rainfall intensity at the inflection point (less the assumed minimum runoff).

Figure 0-8
Example Determination of Runoff Coefficient Inflection Point for an Arbitrary Soil Type in Appendix C of LACDPW (2006)

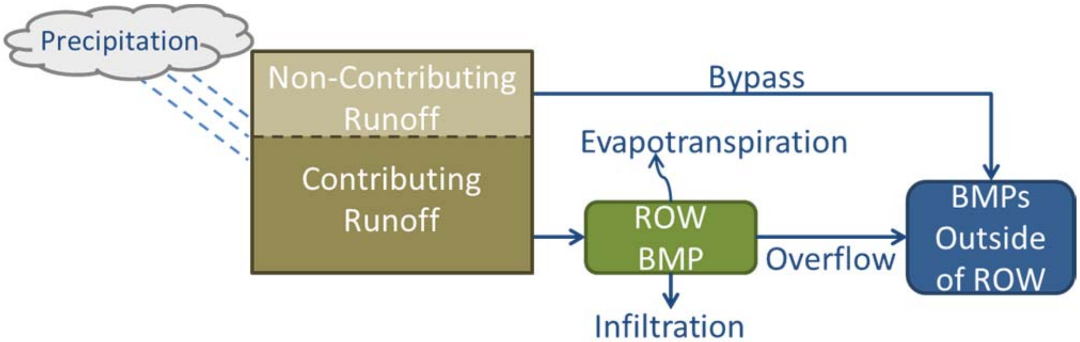


The inflection point, and subsequently calculated infiltration rate, for each unique soil type in the ESGV WMP area were identified using the runoff coefficient curves in Appendix C of the *Hydrology Manual* (LADPW 2006). Subwatershed areas were then intersected with the soil type coverage to calculate an area-weighted infiltration rate. Appendix B shows the distribution of the infiltration rates.

A-3.4.4 Summary of Planning-Level ROW BMP Capacities

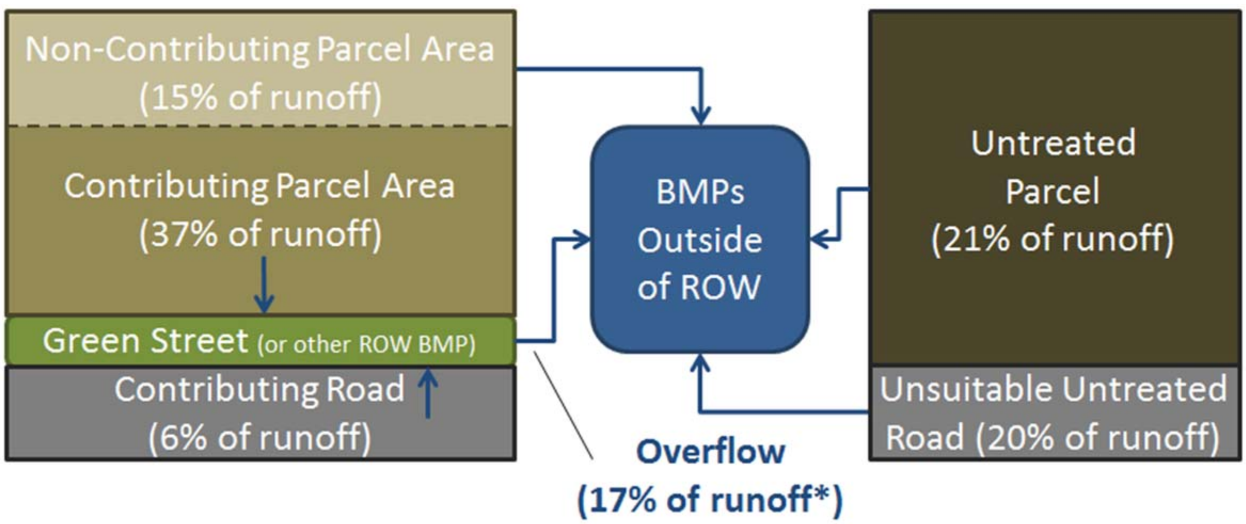
To accurately predict the runoff reduction provided by green streets, BMP models were set up using the BMP tools in WMMS. The contributing drainage area properties, BMP configuration, and infiltration rates for each subwatershed as described in the previous section were used as input into the analysis. The BMP tool in WMMS represents the hydrologic conditions of each subwatershed from runoff to BMP performance to bypass. It is best understood by following the runoff flow path through a typical watershed. Each land use is assigned a runoff time series which is routed to either a BMP or as bypass. The runoff routed to the BMP serves as the inflow and fills up the available ponding depth and the soil media void space. While the storage area fills, the BMP outflows through infiltration and evapotranspiration. Once the storage area is full, the water overflows, which is then routed downstream to another BMP. **Figure 0-9** shows the simple BMP runoff flow paths.

Figure 0-9
Green Streets Runoff Routing Model Schematic (arrows denote water pathways)



Based on the routing configuration findings outlined in A-3.4.2 and the BMP modeling analysis, up to 43 percent of the watershed runoff drains to the identified green street retrofit locations (with 26 percent being captured by the BMPs and 17 percent overflowing downstream). The remainder of the watershed runoff (57 percent of the total) must be managed through other volume reduction strategies.

Figure 0-10
Summary of Runoff Routing by Area (arrows denote direction of runoff routing; figure not to scale)



*Note: Overflow from green streets is the difference between the contributing parcel and roadway runoff less the green street volume reduction of 26%.

A-3.5 NON-ROW BMP CAPACITY ASSESSMENT

Excess volume that does not drain to the ROW or is unable to be captured by ROW BMPs (due to overflowing) must be retained through non-ROW BMPs. These non-ROW BMPs potentially include the following:

- Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, etc.)
- Retention of runoff from new and redeveloped private parcels subject to LID ordinances.

- Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
- Regional BMPs to capture and retain runoff from large upstream areas prior to discharge to receiving waters.

The following non-ROW BMP capacity assessment was performed as a planning-level exercise to help guide strategies for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities can be used as a baseline goal for meeting numeric targets, but adaptive management should be used to refine these strategies over time.

A-3.5.1 LID on Public Parcels

Retrofitting public parcels with LID can be an efficient strategy for reducing stormwater runoff. This method allows municipalities the flexibility to prioritize and schedule stormwater projects to coincide with improvements that are already on the books (such as scheduled parking lot resurfacing, utility work, and public park improvements). Implementing LID on public parcels also allows municipalities the freedom to construct, inspect, and maintain BMPs without the need to purchase private property or to create stormwater easements.

The spatial extent of public parcels in each subwatershed was identified by selecting all parcels labeled as public by their assessors identification number (AIN). A total of 7,320 acres of public land was identified during this process (35% of the total WMP area). Runoff generated by each specific public parcel during the 85th-percentile, 24-hour storm was then extracted from the WMMS model output, and the runoff from any Caltrans or permitted non-MS4 land that overlapped public parcels was subtracted to avoid double-counting. The remaining runoff volume represented the maximum potential design storm runoff to be retained on public parcels.

LID retrofits are not feasible in all locations due to steep slopes, soil contamination hazards, and other constrains. The total runoff to be retained on public parcels was therefore discounted by 30% in order to provide a more realistic goal; this estimate was made in the lack of more detailed data, based on past LID screening exercises performed in Los Angeles County. The discount factor should be refined as actual public project sites are screened and prioritized.

A-3.5.2 LID on Private Parcels from (Re)Development

The Permit requires initiation of LID ordinances that require implementation of LID BMPs during new development and redevelopment. LID practices constructed during *new* development will likely have a net zero impact on runoff volumes because predevelopment conditions will theoretically be restored to the site via construction of new BMPs; however, LID incorporated into *re*development projects will reduce existing runoff volumes discharged by the MS4 because existing impervious surfaces will be retrofit with BMPs.

To estimate the impact of redevelopment on meeting the design storm runoff target, redevelopment data were submitted by the jurisdictions. Typical parcel sizes and redevelopment rates (in terms of parcels per year) were evaluated based on at least two years of submitted data to estimate the total private parcel area to be redeveloped (and subsequently retrofit with BMPs) per year. Public parcels were not considered in this analysis because they were previously considered in Section A-3.5.1.

The redevelopment rates were applied regionally to multi-family residential, commercial, and institutional land use areas throughout each subwatershed, and it was assumed that all runoff from the redeveloped area would be retained at the end of the compliance schedule (2026). High-density single-family land uses were not considered because the area threshold that triggers a redevelopment project (5,000 square feet of new/replaced impervious area) would not commonly be surpassed on single family parcels. Industrial land uses were also not considered because these analyses could potentially overlap with areas already regulated under non-MS4 stormwater permits.

Table 0-7
Estimated redevelopment rates reported by jurisdiction

Jurisdiction	Typical Redeveloped Parcel Size (ac)	Mean Land Area Redevelopment Rate (ac/year)
Claremont	1.25	8.125
La Verne	2	2
Pomona	8	90
San Dimas	4.8	4.176

A-3.5.3 Downspout Disconnection Program

Impervious surfaces are considered *directly connected* when runoff is routed to the storm drain system without providing opportunities for infiltration. The rate and volume of runoff entering the MS4 can be reduced by disconnecting impervious surfaces, (such as rooftops with downspouts plumbed to the gutter or storm drain) such that runoff is afforded the chance to be stored, infiltrated, and/or evapotranspired.

To simulate a downspout disconnection program, it was assumed that disconnections would be performed on high-density single-family residential, multi-family residential, and institutional land uses because structures in these land uses tend to be surrounded by open space such as lawns, open space, and playgrounds (vis-à-vis commercial and industrial land uses that tend to have pavement and sidewalks abutting the buildings). Next, it was assumed that 10%, 50%, and 50% of high-density single-family residential, multi-family residential, and institutional land uses are directly connected, respectively. This was a planning-level estimate that was made in the lack of more detailed data and is considered conservative considering many currently disconnected downspouts are in fact routed to driveways, curbside drains, and compacted urban lawns.

Downspout disconnection was simulated by modeling the unit hydrology of downspout disconnection for each combination of considered land use and underlying soil infiltration rate. Only private parcels were considered for this analysis because runoff reduction on public parcels was already considered in Section A-3.5.1. Typical dimensions and drainage area ratios of rooftop to open space for each considered land use were defined using aerial orthoimagery and it was assumed that runoff exiting a disconnected downspout would disperse at a 45˚-angle until encountering the parcel boundary. Depressional storage for open space to which runoff was routed was assumed to be 0.1 inches per ASCE (1992). The unit hydrologic response of

disconnected parcels was then extrapolated for each private parcel - land use – infiltration rate combination within each subwatershed.

As mentioned above, it is important to note that the effective directly connected area eligible for a disconnection program may be much larger than the considered area because many “disconnected” downspouts are routed to driveways or compacted urban lawns. Downspout disconnection programs should offer incentives for property owners who truly disconnect their rooftop by incorporating stormwater harvesting and retention practices such as rain barrels, rain gardens, and/or soil amendments.

A-3.5.4 Summary of Planning-Level Non-ROW BMP Capacities

The following table (**Table 0-8**) summarizes the percent reduction in design storm runoff (excluding non-MS4 runoff) that could potentially be achieved by BMPs outside of the ROW.

Table 0-8
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Potential Reduction in MS4 Design Storm Runoff From Non-ROW BMPs, ac-ft (percentage of MS4 treatment capacity)			
	LID on Public Parcels	LID on Private Parcels	Downspout Disconnection	Total per Jurisdiction
Claremont	5.05 (6%)	4.31 (5%)	3.30 (4%)	12.66 (15%)
La Verne	6.91 (5%)	1.08 (1%)	5.35 (4%)	13.34 (11%)
Pomona	17.41 (8%)	29.06 (14%)	6.71 (3%)	53.18 (26%)
San Dimas	8.44 (7%)	1.78 (1%)	4.50 (4%)	14.72 (12%)
Total per BMP (ESGV-wide)	**37.82 (7%)**	**36.23 (7%)**	**19.86 (4%)**	**Grand Total = 93.91 (17%)**

A-4 Adaptive Management Strategy for Achieving BMP Capacities

Expansive networks of BMPs that will be required to retain the design storm volumes for each jurisdiction. As BMPs are implemented, the experience gained can and should be used to improve the reduction strategy approach and associated analyses. This section summarizes potential methods to either [1] increase the effectiveness/capacity of ROW BMPs or [2] reduce the total runoff that is not retained by ROW BMPs.

A-4.1 OVERFLOW FROM ROW BMPS

The RAA highlighted only bioretention as a BMP option for green streets. Permeable pavement could also be implemented within the ROW to increase the storage capacity and reduce the BMP overflow. Preliminary findings indicate that inclusion of permeable pavement with all modeled green street opportunities could result in full retention of the design storm runoff from the contributing areas, which would eliminate green street overflows and increase the total green street reduction from 37 percent to 52 percent.

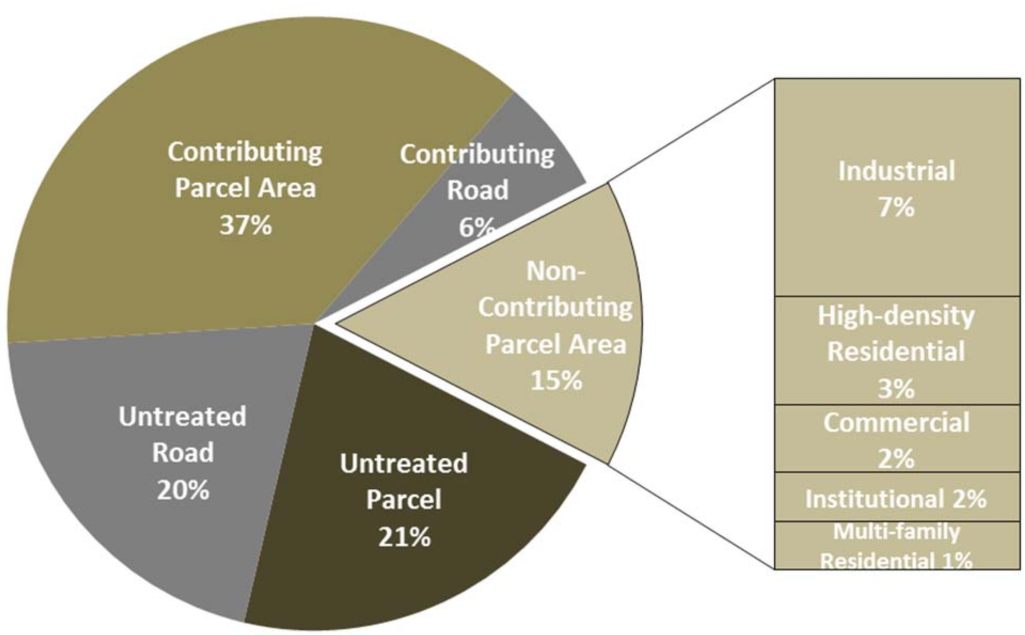
In the course of the RAA, the available area for ROW BMP implementation was limited to 30 percent of the road length (see Section A-3.4.3). This assumption limits the area for implementation and results in overflow when green streets reach their maximum capacity. To limit the overflow, the maximum extent of ROW BMP implementation along streets could be increased; however, this percentage should only be adjusted on a street-by-street basis upon more detailed investigation of the watershed.

A-4.2 PARCEL AREAS THAT DO NOT DRAIN TO ROW WHERE ROW BMPS ARE SUITABLE

As described in Section A-3.4.3, many parcels include areas that do not contribute runoff to adjacent streets that are candidates for green street retrofits. Based on the current assumptions, approximately 15 percent of the excess runoff comes from the non-contributing parcel area (**Figure 0-11**). To decrease this excess runoff, the assumed contributing percentages can be adjusted based on a deeper understanding of the watershed and local observations.

Typical industrial and large commercial parcels include on-site collection systems that are directly connected to the storm sewer system and thus bypass any opportunity for treatment through green streets. Programs may be possible to promote on-site capture of commercial/industrial stormwater runoff that would reduce the overall runoff and decrease the total volume required for treatment with regional BMPs. For example, a low-impact development retrofit program that targeted the directly connected areas of industrial parcels might be one way to address the 7 percent of untreated runoff generated from this land use (**Figure 0-11**).

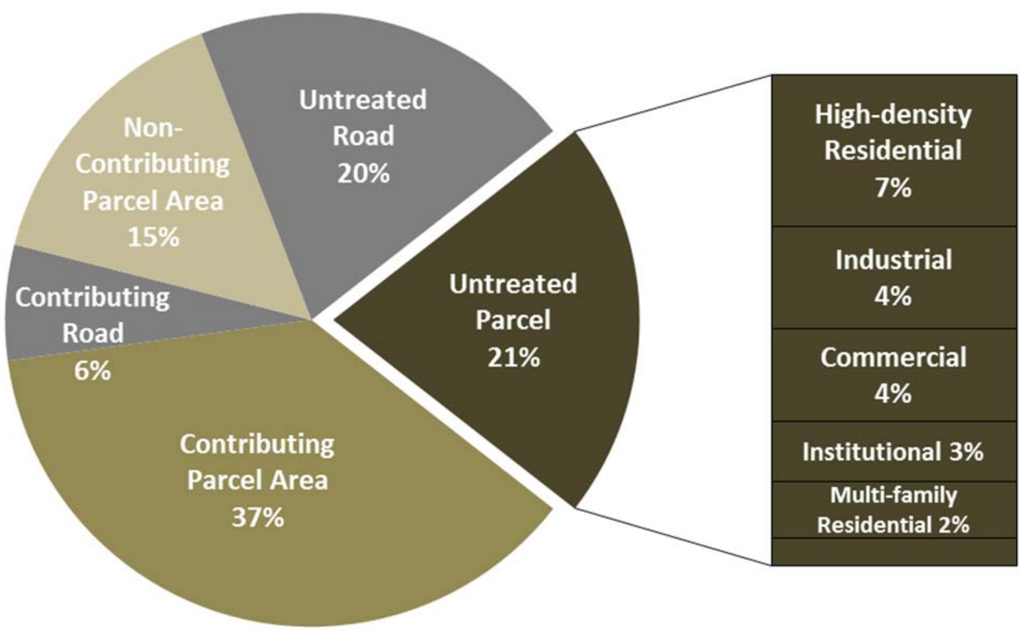
Figure 0-11
Runoff Distribution and Routing Emphasizing Runoff from Areas that do not Drain to the ROW



A-4.3 UNTREATED PARCELS

The majority of land area (53 percent) analyzed in this study were classified as "untreated parcels" (**Figure 0-7**). Untreated parcels include open space and parcels that are adjacent to roads deemed unsuitable for green street retrofit (see Section A-3.4.3). While open space comprises much of the land in this area, the runoff generated from open space parcels during the design storm scenario is small compared to urbanized areas. The majority of the untreated runoff is generated from the developed parcels that drain to roads deemed unsuitable for green street retrofits (**Figure 0-12**). Since this area contributes 21 percent of all runoff for the design storm, it is likely that non-ROW capture strategies will need to be considered. Similar to the example provided under Non-Draining Parcel Area subheading above, low-impact development retrofit incentive programs could be explored as non-ROW BMPs (however, it should be noted that low-impact development may be difficult in some of these areas because unsuitable roads were often eliminated due to high slopes). Other non-ROW BMPs that may also be considered includes regional BMPs.

Figure 0-12
Runoff Distribution and Routing Emphasizing Runoff from Untreated Parcels



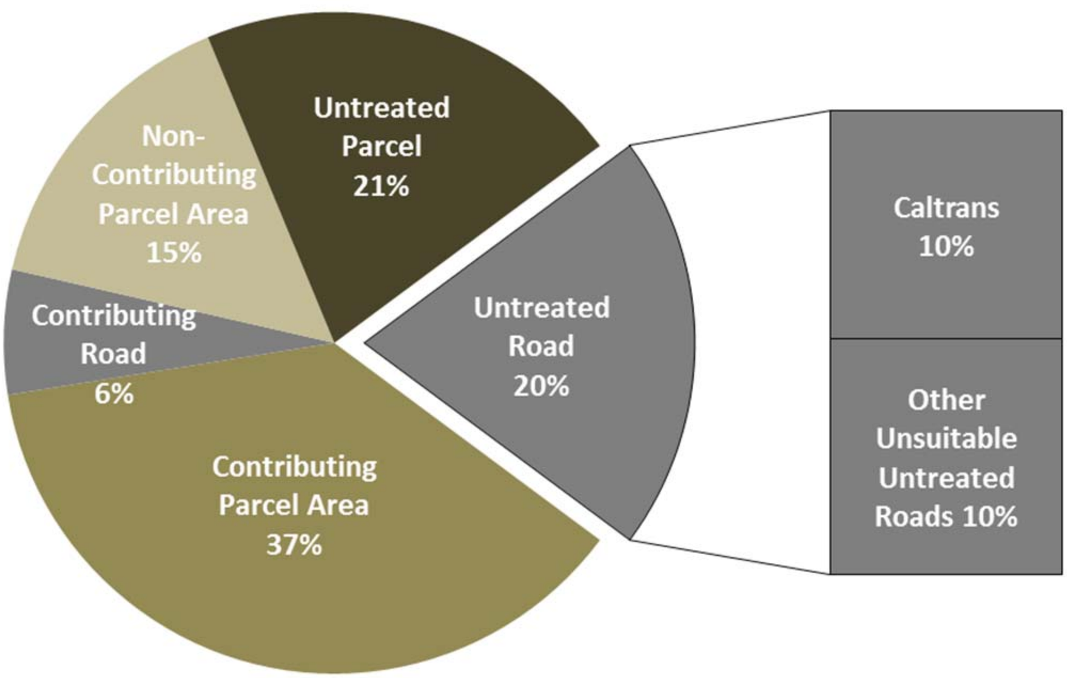
A-4.4 UNTREATED ROADS

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or open space or vacant parcels adjacent. The majority of the roads identified were freeways and highways. The freeways and highways contribute 10 percent of the total runoff to the storm sewer system (**Figure 0-13**). As discussed in Section A-3, the excess runoff

from freeways and highways fall under the jurisdiction of Caltrans and are not under the charge of the MS4.

Other unsuitable, untreatable roads contribute 10 percent of the total runoff. Other unsuitable, untreatable roads with appropriate slopes can implement green streets to solely treat *roadway* runoff in situations where the adjacent parcels are expected to contribute insignificant runoff or where runoff is conveyed away from the ROW. For instance, green streets sited along predominantly pervious parcels (those classified as Open Space, Vacant, etc.) would primarily capture and treat runoff only from the road surface. This procedure can identify the additional potential road drainage area that can be treated through ROW BMPs.

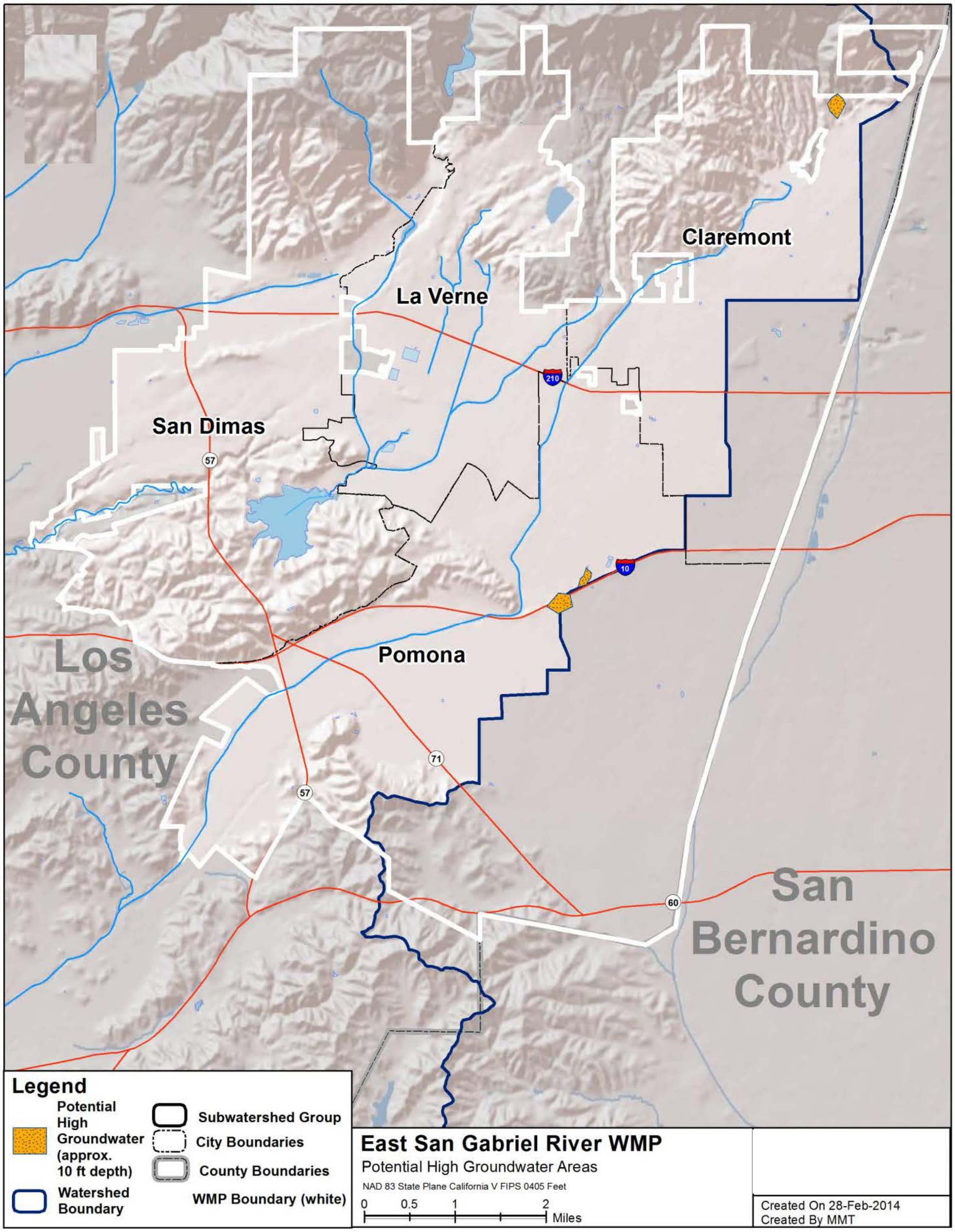
Figure 0-13
Runoff Distribution and Routing Emphasizing Runoff from Untreated Roads



Appendix B

Additional Details and Supporting Information on BMP Modeling

Figure B-1
Potential High Groundwater Areas



RB-AR3875

Figure B-2
ROW BMP Potential Opportunities

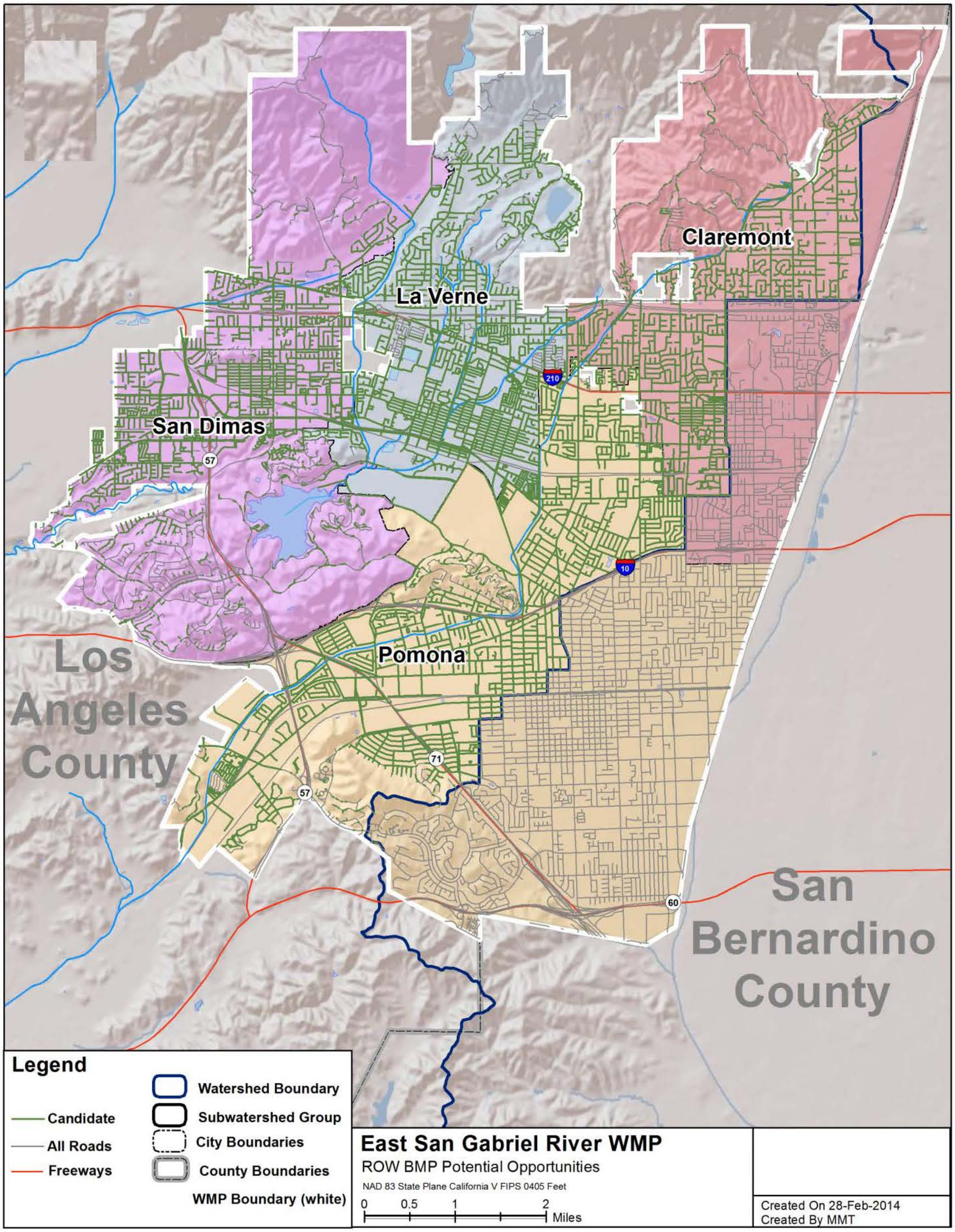
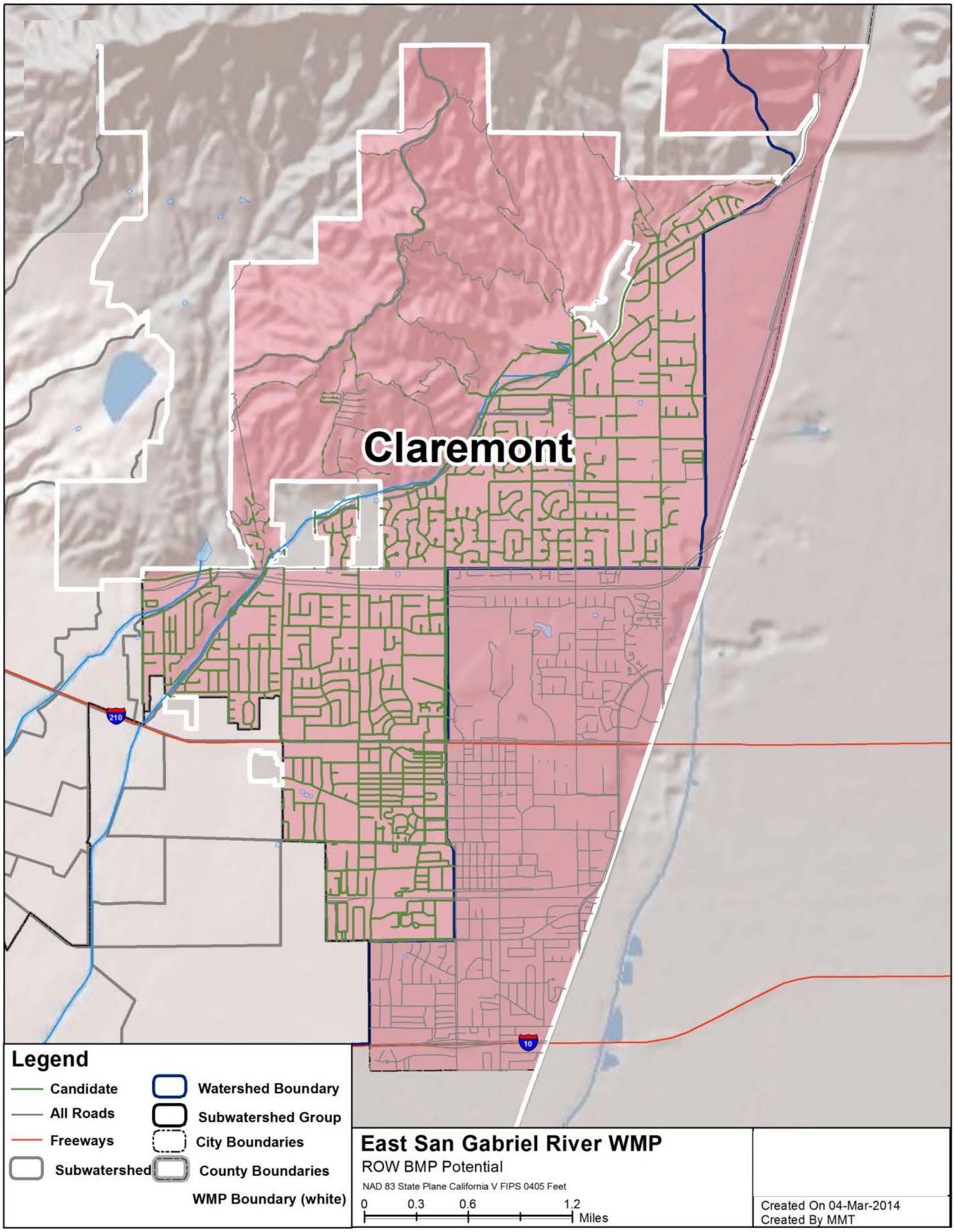


Figure B-3
ROW BMP Potential Opportunities – City of Claremont



RB-AR3877

Figure B-4
ROW BMP Potential Opportunities – City of La Verne

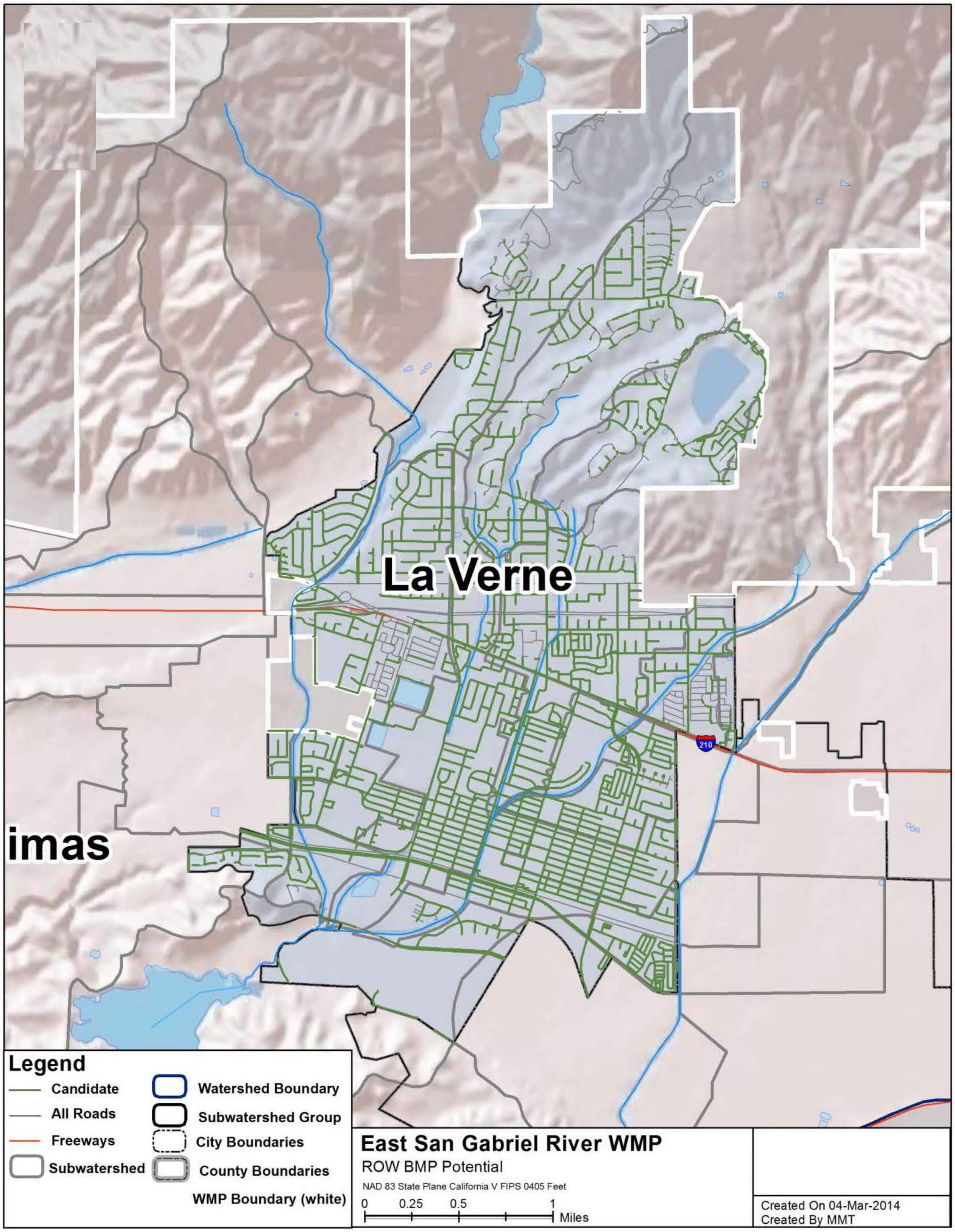


Figure B-5
ROW BMP Potential Opportunities – City of Pomona

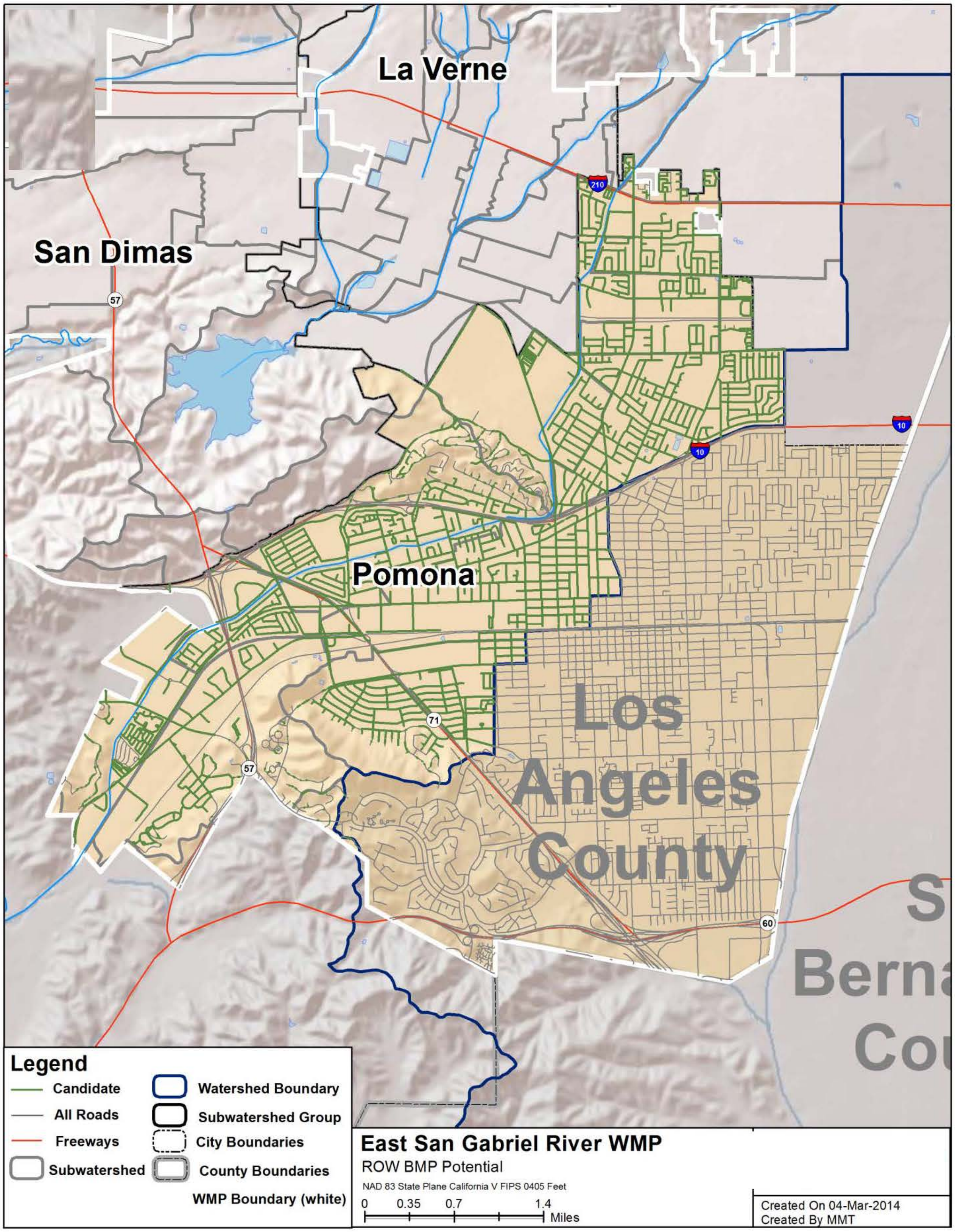
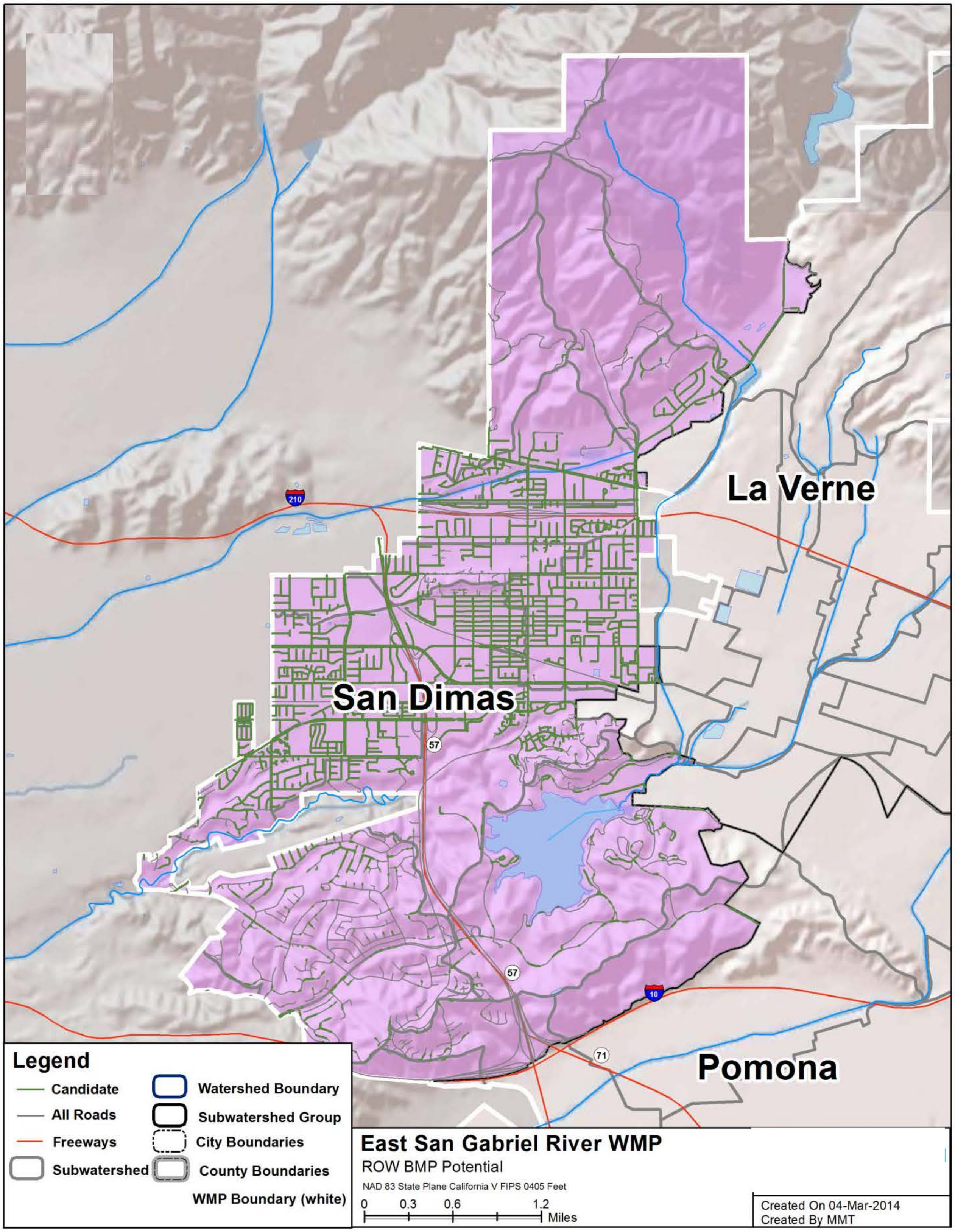


Figure B-6
ROW BMP Potential Opportunities – City of San Dimas



RB-AR3880

Figure B-7
Subwatershed Infiltration Rates

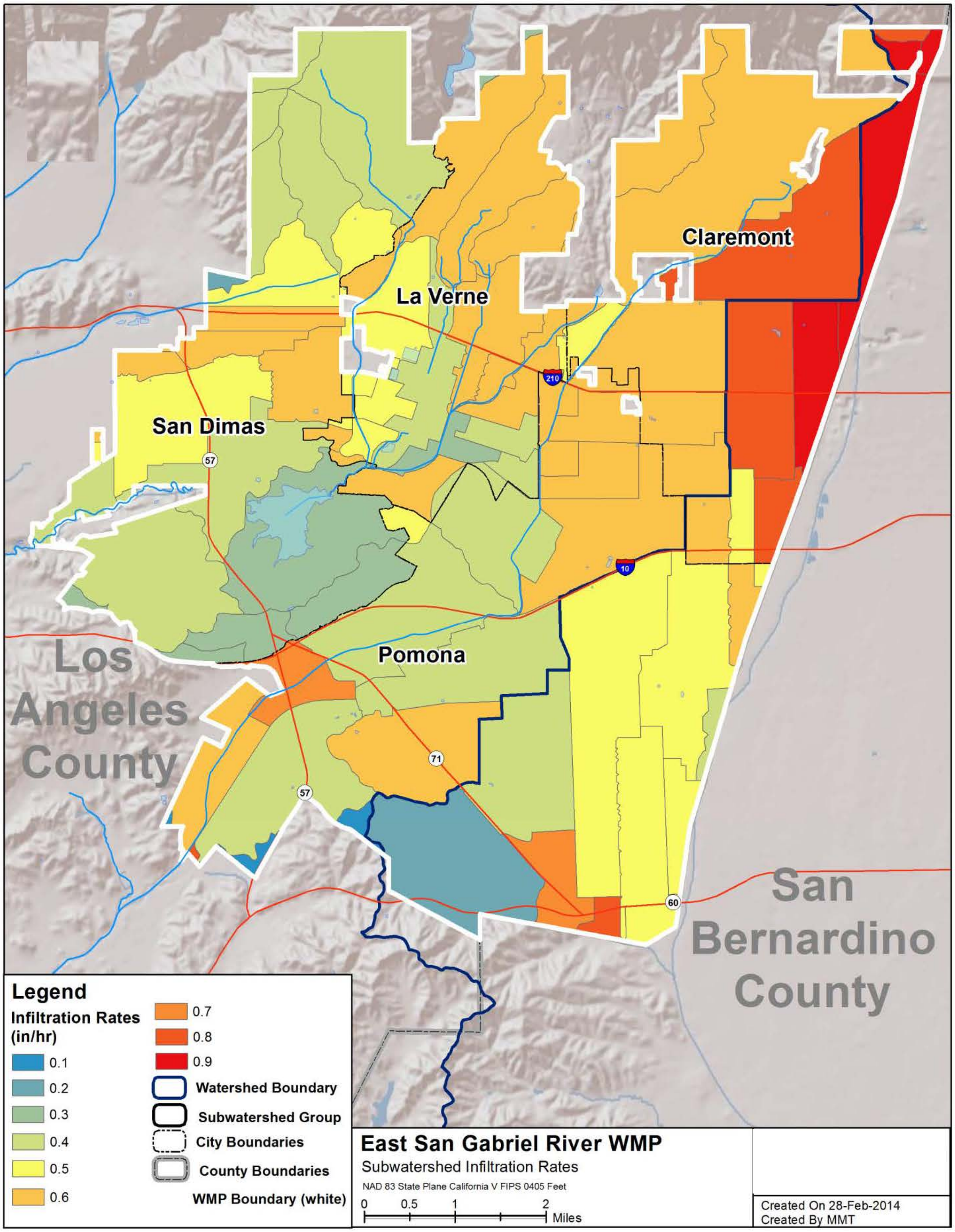


Table B-1
Jurisdictional Ranking Tables for Scheduling, Prioritizing & Implementing BMPs

Claremont

Subwatershed	Rank	Tier
175225	1	1
175221	2	1
175222	3	2
175405	4	3
175223	5	3
175216	6	3
175408	7	3
175224	8	N/A
175409	9	N/A

La Verne

Subwatershed	Rank	Tier
435397	1	1
435398	2	1
435223	3	1
435218	4	1
435221	5	1
435407	6	1
435401	7	1
435411	8	1
435220	9	1
435402	10	1
435400	11	1
435217	12	2
435409	13	2
435408	14	2
435405	15	2
435410	16	2
435404	17	3
435406	18	3
435403	19	3
435412	20	3
435399	21	3
435468	22	3
435413	23	N/A
435415	24	N/A

Pomona

Subwatershed	Rank	Tier
635208	1	1
635210	2	1
635213	3	1
635212	4	1
635223	5	1
635219	6	1
635215	7	1
635222	8	2
635217	9	2
635209	10	3
635214	11	3
635216	12	3
635220	13	3
635221	14	3
635403	15	3
635218	16	3
635408	17	3
635211	18	N/A
635207	19	N/A
635399	20	N/A

San Dimas

Subwatershed	Rank	Tier
695400	1	1
695387	2	1
695481	3	1
695468	4	1
695464	5	1
695397	6	1
695398	7	1
695395	8	1
695394	9	2
695390	10	2
695410	11	2
695411	12	2
695209	13	2
695396	14	2
695465	15	3
695466	16	3
695484	17	N/A
695393	18	N/A
695482	19	N/A
695208	20	N/A
695489	21	N/A
695412	22	N/A
695210	23	N/A
695467	24	N/A
695399	25	N/A

Figure B-8
Subwatershed Implementation Prioritization – City of Claremont

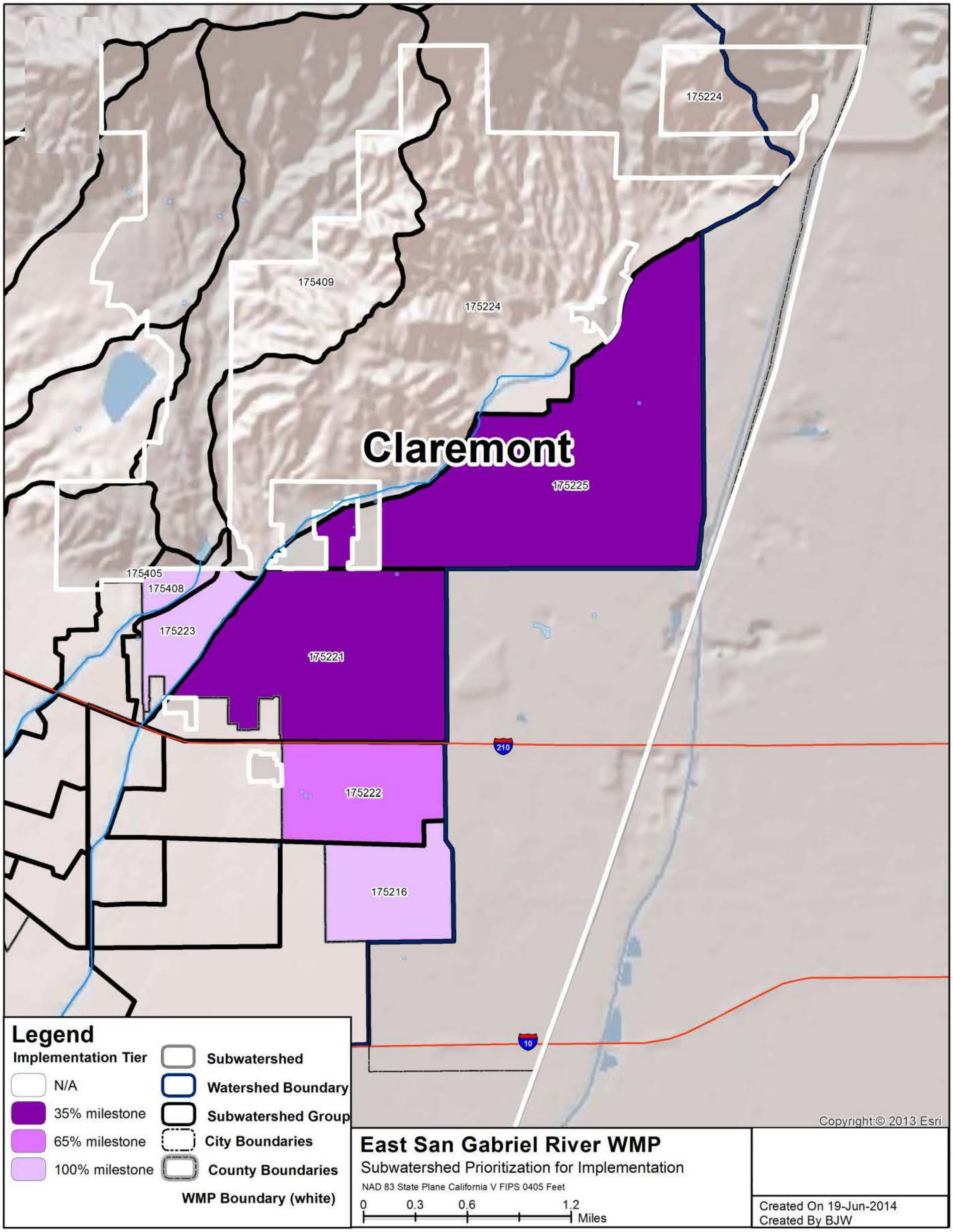


Figure B-9
Subwatershed Implementation Prioritization – City of La Verne

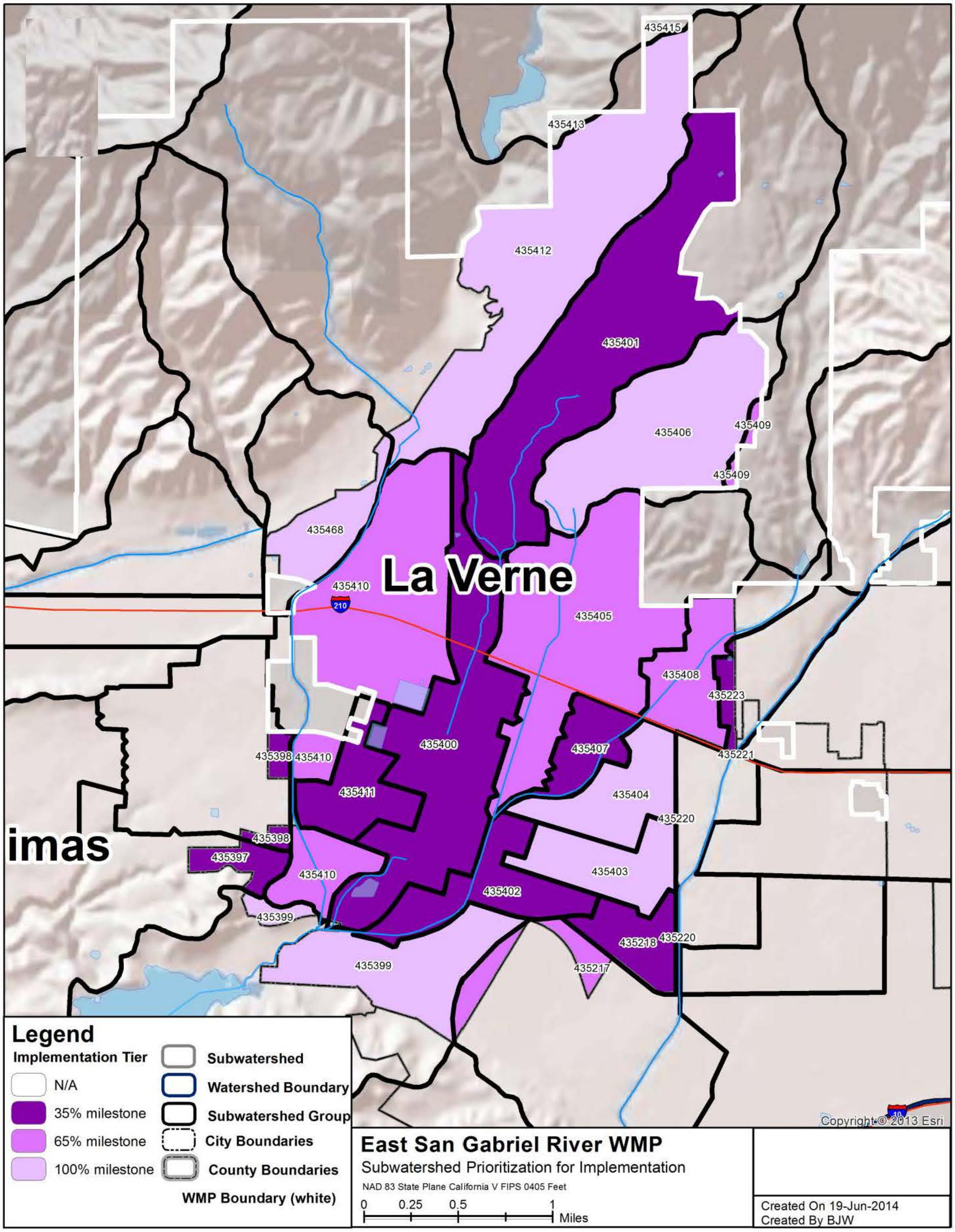


Figure B-10
Subwatershed Implementation Prioritization – City of Pomona

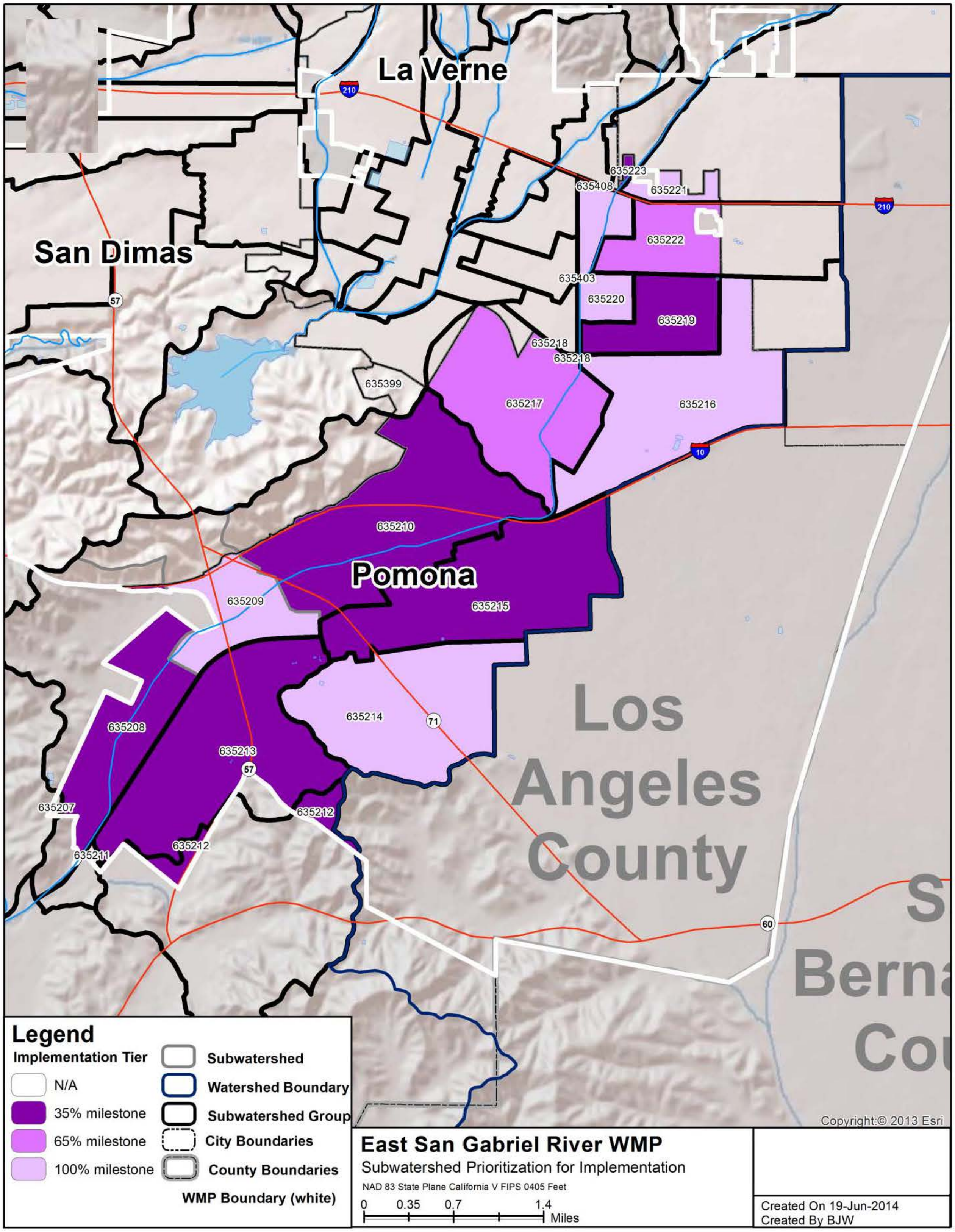
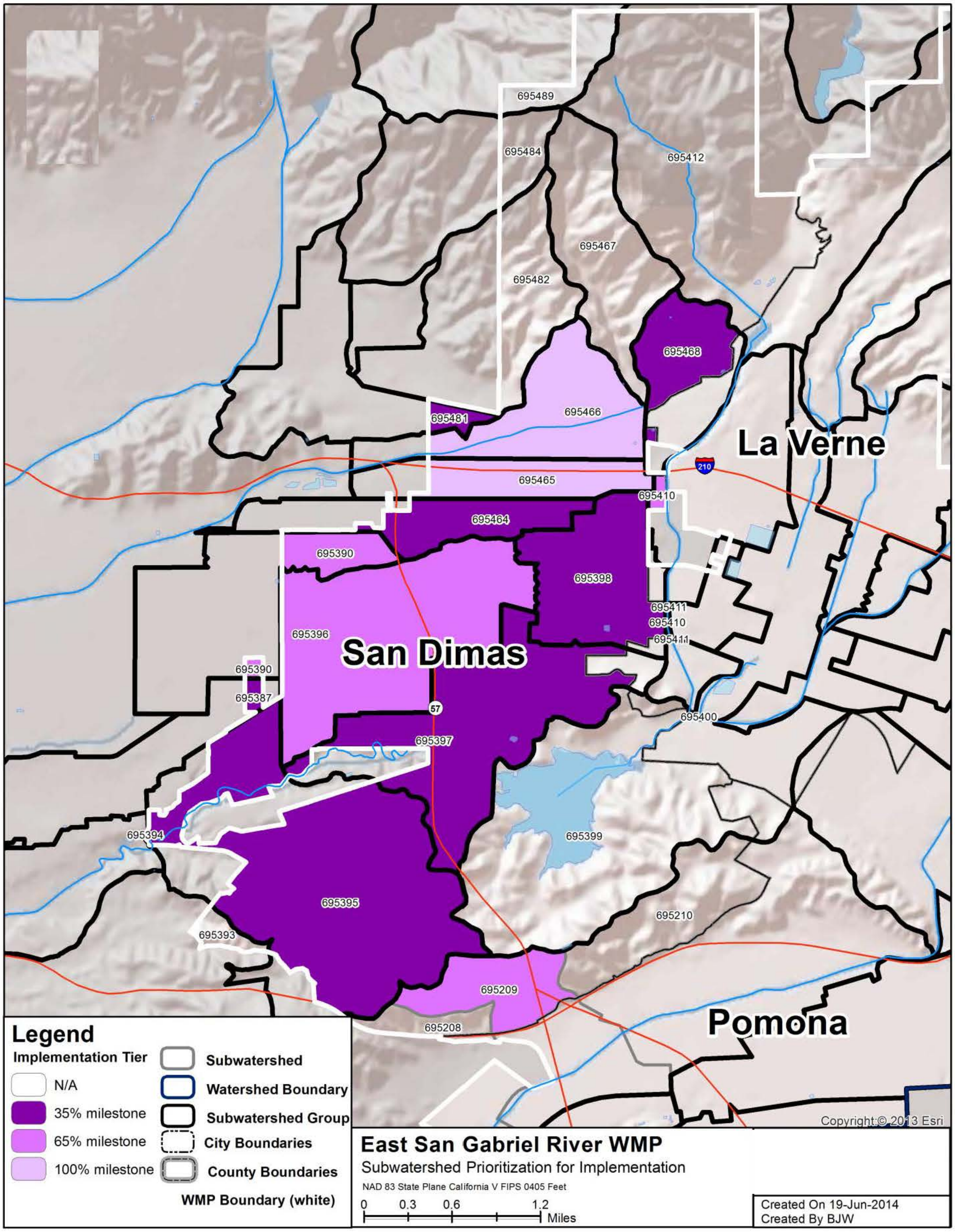


Figure B-11
Subwatershed Implementation Prioritization – City of San Dimas



Appendix C

Green Streets Policies and LID Ordinances for the East San Gabriel Valley Watershed Management Group Members

RESOLUTION NO. 2014-53

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY

WHEREAS, the new Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region, on November 8, 2012; and

WHEREAS, at the July 23, 2013 meeting, the City Council directed staff to move forward in the preparation of a Group Watershed Management Plan with the cities of Pomona, La Verne and San Dimas; and

WHEREAS, Municipalities electing to prepare a Watershed Management Plan (WMP) or an Enhanced Watershed Management Plan (EWMP) under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors; and

WHEREAS, Green Streets are enhancements to street and road projects to improve the quality of storm water and reduce urban runoff through the implementation of infiltration measures such as bioretention, infiltration trenches and dry wells; bio-treatment/infiltration measures such as flow-through planters and vegetated swales; treatment Best Management Practices (BMPs) such as catch basin filters and screens; and implementing and maintaining xeriscaped parkways and tree lined streets; and

WHEREAS, Green Streets are also an amenity that provide many benefits including groundwater replenishment, creation of attractive streetscapes, and pedestrian and bicycle accessibility.

NOW THEREFORE, THE CLAREMONT CITY COUNCIL DOES HEREBY RESOLVE:

SECTION 1. That the City Council of the City of Claremont, California, hereby directs the Director of Community Development and the Director of Community Services to implement Green Streets for transportation corridors as described in the City of Claremont Green Streets Policy, attached hereto.

SECTION 2. Routine maintenance of roadways and activities including, but not limited to, (a) application of seal coats, slurry seals, grind and overlays; and (b) reconstruction to maintain original line and grade, are excluded from the Green Streets Policy.

SECTION 3. At its regular meeting of June 24, 2014, the City Council determined that the adoption of the Green Streets Policy is necessary to support compliance with the new MS4 Permit.

SECTION 4. The Community Development Department and the Community Service Department shall incorporate aspects of Green Streets into annual staff trainings to help ensure proper implementation of such measures for transportation corridors.

SECTION 5. The City Council finds that the adoption of the Green Streets Policy is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Green Streets Policy since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the Green Streets Policy is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the Green Streets Policy would result in future unknown construction activities that would be exempt as replacement or reconstruction projects pursuant to State CEQA Guidelines section 15302. City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Resolution.

SECTION 6. The Mayor shall sign this Resolution and the City Clerk shall attest and certify to the passage and adoption thereof.

PASSED, APPROVED, AND ADOPTED this 24th day of June 2014.

Joseph M Lyons
Mayor, City of Claremont

ATTEST:

City Clerk, City of Claremont

APPROVED AS TO FORM:

City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)ss.
CITY OF CLAREMONT)

I, Shelley Desautels, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Resolution No. 2014-53 was regularly adopted by the City Council of said City of Claremont at a regular meeting of said Council held on the 24th day of June, 2014, by the following vote:

AYES:	COUNCILMEMBERS:	CALAYCAY, LYONS, NASIALI, PEDROZA, SCHROEDER
NOES:	COUNCILMEMBERS:	NONE
ABSTENSIONS:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE

City Clerk of the City of Claremont

ORDINANCE NO.2014-

AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLISHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF.

WHEREAS, the City of Claremont is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City of Claremont has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State; and

WHEREAS, the City is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board – Los Angeles Region," (Order No. R4-2012-0175), which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit").

WHEREAS, the MS4 Permit requires those permittees submitting a Watershed Management Plan, or an Enhanced Watershed Management Plan to develop and implement a Low Impact Development (LID) Ordinance; and

WHEREAS, the new MS4 Permit establishes new requirements regulating discharge and connection into the City's storm drain facilities, and control of stormwater and non-stormwater runoff; and

WHEREAS, the City of Claremont is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social and economic considerations; and

WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of stormwater and non-stormwater runoff by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

WHEREAS, it is the intent of the City of Claremont to replace the existing Standard

Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under Section 8.28.050(C) "Applicability". Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF CLAREMONT DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 8.28 (Stormwater and Runoff Pollution Control) of Title 8 of the Municipal Code (Public Health and Safety) is hereby deleted and replaced in its entirety, as follows:

Chapter 8.28
STORMWATER AND RUNOFF POLLUTION CONTROL

Sections:

8.28.010 Definitions.

The following words, phrases and terms as used in this chapter shall have the meanings ascribed to them in this Section 8.28.010.

Act or **Clean Water Act (CWA)** means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

Adverse Impact means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants to the storm drain system or to receiving waters.

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes: SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539.

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional

Water Board on June 13, 1994 and subsequent amendments.

Beneficial Uses means existing or potential uses of receiving waters in the permit area as designated by the Regional Board in the Basin Plan.

Best Management Practice (BMPs) means practices or physical devices or systems designed to prevent or reduce pollutant loading from storm water or non-storm water discharges to receiving waters, or designed to reduce the volume of storm water or non-storm water discharged to the receiving water.

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term “biofiltration” as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board’s Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales.

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

City means the City of Claremont, California.

Code of Federal Regulations (CFR) means the codification of the general and permanent rules and regulations published in the Federal Register by the executive departments and agencies of the federal government of the United States.

Commercial Development means any public or private activity not defined as an industrial activity in 40 CFR 122.26(b)(14), involved in the storage, transportation, distribution, exchange or sale of goods and/or commodities or providing professional and/or nonprofessional services. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers .

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage is required if more than one acre is disturbed or the activities are part of a larger plan..

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

Council means the City Council of the City of Claremont.

Dechlorinated/Debrominated Swimming Pool/Spa Discharges means discharges from swimming pools/spas and do not include swimming pool/spa filter backwash or swimming pool/spa water containing bacteria, detergents, wastes, or algaecides, or any other chemicals including salts from salt water pools.

Department means the Community Development Department of the City of Claremont.

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

Director means the Director of Community Development, or his/her authorized deputy, agent, representative or inspector.

Discharge means any addition, release, spill, leak, pumping, flow, escape, dumping, or disposal of any pollutant to the storm drain system or to receiving waters from any conveyance or source regulated under the Clean Water Act or its regulations.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation.

Drinking Water Supplier Distribution System Releases means sources of flows from drinking water storage, supply and distribution line testing, and flushing and dewatering of pipes, reservoirs, and vaults, minor non-invasive well maintenance not involving chemical addition(s) where otherwise regulated by NPDES Permit No CAG674001, NPDES Permit No. CAG994005, or another separate NPDES permit.

Essential Non-Emergency Fire Fighting Activities means fire fighting activities, which simulate emergency responses, and routine maintenance and testing activities necessary for the protection of life and property, including building fire suppression

system maintenance and testing (e.g. sprinkler line flushing) and fire hydrant testing and maintenance. Discharges from vehicle washing are not considered essential and as such are not conditionally exempt.

Flow-through BMPs means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

Good Housekeeping Practice means a best management practice related to the transfer, storage, use, or cleanup of materials which when performed in a regular manner minimizes the discharge or potential discharge of pollutants to the storm drain system and/or receiving waters.

Hazardous Material means any material defined as hazardous by Chapter 6.95 of the California Health and Safety Code or any substance designated pursuant to 40 CFR 302. This also includes any unlisted hazardous substance which is a solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), or is a hazardous substance under Section 101(14) of the Act, if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

Hazardous Waste means a hazardous material which is to be discharged, discarded, recycled, and/or reprocessed.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

Illicit Connection means either of the following:

1. Any drain or conveyance whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by a government agency; or

2. Any drain or conveyance connected from a commercial or industrial land use

to the storm drain system which has not been documented in plans, maps or equivalent records and approved by the City.

Illicit Discharge means any discharge to the storm drain system or receiving waters that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. Illicit discharge includes all non-stormwater discharges except discharges pursuant to a NPDES permit or discharges that are exempted or conditionally exempted by such permit.

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Activity means any public or private activity as defined in 40 CFR 122.26(b)(14) required to obtain a NPDES permit.

Industrial/Commercial Facility means any public or private facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, or any facility involved and/or used in providing professional and nonprofessional services. This category of facility includes, but is not limited to, any facility defined by a Standard Industrial Classification (SIC).

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement.

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

National Pollutant Discharge Elimination System (NPDES) permit means a general, group, or industrial permit issued by the United States Environmental Protection Agency, the State Water Resources Control Board or a California Regional Water Quality Control Board pursuant to the Act, that authorizes discharges to waters of the United States.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-Stormwater Discharge means any discharge to the storm drain system and/or receiving waters that is not composed entirely of stormwater.

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces

Permit means the Waste Discharge Requirements for Municipal Separate Storm Sewer Systems within the Coastal Watersheds of Los Angeles County (Order No. R4-2012-0175) and the National Pollutant Discharge Elimination System Permit No. CAS004001, including any amendments, reissuance, renewal, or successor permit issued by the Regional Board.

Person means any natural person, firm, association, club, organization, corporation, partnership, business, trust, public agency, company or other entity which is recognized by law as the subject of rights and duties.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s).

Pollutant shall have the same meaning as set forth in Section 502(6) of the Act and as incorporated into the California Water Code Section 13373. Pollutants include, but are not limited to the following:

1. Commercial and industrial waste (such as fuels, solvents, chemicals, detergents, plastic pellets,
hazardous materials or substances, hazardous wastes, fertilizers, pesticides, soot, slag, ash, and sludge);
2. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium and arsenic) and nonmetals (such as carbon, chlorine, fluorine, phosphorous and sulfur);
3. Petroleum hydrocarbons (such as fuels, oils, lubricants, surfactants, waste oils, solvents, coolants, and grease);
4. Eroded soils, sediment, and particulate materials in amounts which may adversely affect any beneficial use of the receiving waters, flora, or fauna of the state;
5. Animal wastes (such as discharges from confinement facilities, kennels, pens,

recreational facilities, stables, and show facilities);

6. Substances having acidic or corrosive characteristics such as a pH of less than six or greater than nine;

7. Substances having unusual coloration or turbidity, levels of fecal coliform, fecal streptococcus, or enterococcus, which may adversely affect the beneficial use of the receiving waters, flora, or fauna of the state; and

8. Anything which causes the deterioration of water quality such that it impairs subsequent and/or competing uses of the water.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department.

Receiving Waters means all waters of the United States into which a pollutant is or may be discharged. "Waters of the United States" means surface watercourses and water bodies as defined at 40 CFR 122.2, including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry stormwater at and during all times and seasons.

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Board means a Los Angeles Regional Water Quality Control Board.

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.

Routine Maintenance

Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Runoff means any stormwater or non-stormwater discharge from any surface and/or drainage area that reaches the storm drain system and/or receiving waters.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any “facility or activity” is physically located or conducted, including adjacent land used in connection with the facility or activity.

State Board means the State Water Resources Control Board.

Storm Drain System means any street, gutter, conduit, natural or artificial drain, curb, inlet, detention and retention basins, channel and watercourse, and/or other facility or any combination thereof, that is owned or operated by the city and used for the purpose of collecting, storing, conveying, transporting, and/or disposing of runoff.

Storm Water or Stormwater means any surface flow, runoff or drainage which

originates from atmospheric moisture (rainfall or snowmelt) and falls onto land, water, and/or other surfaces.

Stormwater Pollution Prevention Plan (SWPPP) means a plan required by and whose contents are specified in a NPDES permit.

Stormwater Runoff means stormwater which travels across any surface to the storm drain system or receiving waters.

Structural BMP means any permanent facility constructed to control, treat, store, divert, neutralize, dispose of, and/or monitor runoff in order to reduce or measure pollutants.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects. The requirements of this Chapter replace the SUSMP unless otherwise required by the Director or State or Regional Board.

Uncontrolled Discharge means any discharge, intentional or accidental, occurring in such a manner that the discharger is unable to determine or regulate the quantity, quality or effects of the discharge.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

U.S. EPA means the United States Environmental Protection Agency.

8.28.020 General Provisions.

A. Short title. The ordinance codified in this chapter shall be known as the "Stormwater and Runoff Pollution Control Ordinance" and may be referred to as such.

B. Purpose and intent. The purpose of this chapter is to protect the health and safety of the residents of the city by protecting the beneficial uses, marine habitats, and ecosystems of receiving waters from pollutants carried by stormwater and non-stormwater discharges. The intent of this chapter is to enhance and protect the water quality of receiving waters consistent with the Act.

C. Applicability of this chapter. The provisions of this chapter shall apply to the discharge, deposit, addition or disposal of any non-stormwater, stormwater and/or runoff to the storm drain system and/or receiving waters within the City of Claremont.

D. Standards, guidelines and criteria. The director may establish uniform minimum standards, guidelines, and/or criteria for specific discharges, connections and/or BMPs. The provisions of this section shall not prohibit the director from requiring a discharger or permittee from taking additional measures to achieve the objectives of this chapter or any permit. (00-07)

8.28.030 Discharge to the Storm Drain System

A. Except as otherwise conditionally authorized by the Permit or any other NPDES permit, waiver or waste discharge order issued by the U.S. EPA, the state board, or a regional board, provided that the discharger is in full compliance with all requirements of

the permit, waiver or order and other applicable laws and regulations, including the provisions of this chapter, and subject to any requirements specified by the Director, no person shall:

1. discharge non-stormwater to the City's storm drain system or to receiving waters except in compliance with the requirements of this Chapter;
2. cause, allow or facilitate any prohibited discharge;
3. discharge, cause, allow or facilitate any discharge that may cause or threaten to cause a condition of pollution or nuisance as defined in Water Code section 13050, that may cause, threaten to cause or contribute to an exceedance of any water quality standard in any Statewide Water Quality Control Plan, California Toxics Rule, or Basin Plan, or that may cause or contribute to the violation of any receiving water limitation.

B. Pursuant to the Permit, discharges which may be conditionally authorized subject to best management practices and other restrictions or prohibitions determined by the Director include, but are not limited to the following types of discharges:

1. Authorized non-storm water discharges from emergency fire-fighting activities (i.e., flows necessary for the protection of life or property;
2. Natural flows, including natural springs;
3. Flows from riparian habitats and wetlands;
4. Diverted stream flows, authorized by the State or Regional Water Board; Uncontaminated ground water infiltration;
5. Rising ground waters where ground water seepage is not otherwise covered by a NPDES permit;
6. Discharges from drinking water supplier distribution systems where not otherwise regulated by an individual or general NPDES permit;
7. Landscape irrigation;
8. Uncontaminated foundation and footing drains;
9. Uncontaminated water from crawl space pumps;
10. Air conditioning condensation;
11. Uncontaminated non-industrial roof drains;
12. Individual residential and occasional non-commercial car washing;
13. Dechlorinated/debrominated swimming pool/spa discharges; and
14. Street and sidewalk wash waters.

C. The Director may limit or prohibit any discharge which is conditionally authorized by the Permit if the discharge is a source of pollutants or causes or contributes to an exceedance of applicable receiving water limitations or water quality based effluent limitations, including but not limited to imposing conditions on such discharge, requiring control measures and other actions to reduce pollutants, requiring diversion of the discharge to the sanitary sewer, or requiring pretreatment.

D. The Director may require any person to obtain a permit from the City before discharging, or causing, allowing, or facilitating any discharge to the storm drain system. It is unlawful to discharge, cause, allow, or facilitate any discharge to the storm drain system in violation of any permit so required.

E. Littering and other discharge of polluting or damaging substances prohibited.

1. No person shall cause any refuse, rubbish, food waste, garbage, or any other discarded or abandoned objects to be littered, thrown, deposited, left, accumulated, maintained or kept in or upon any street, alley, sidewalk, storm drain, inlet, catch basin, conduit, drainage structure, place of business, or upon any public or private property so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters, except when such materials are placed in containers, bags, recycling bins, or other lawfully established waste disposal facilities protected from stormwater or runoff.

2. No person shall cause the disposal of hazardous materials or hazardous wastes into trash containers used for municipal trash disposal.

3. No person shall cause to be discharged to the storm drain system or to receiving waters any pesticide, fungicide, or herbicide prohibited by the U.S. EPA or the California Department of Pesticide Regulation.

4. No person shall cause the accumulation of pollutants, leaves, dirt, or other landscape debris into a street, alley, catch basin, culvert, curb, gutter, inlet, ditch, natural watercourse, flood control channel, canal, storm drain, or any fabricated or natural conveyance so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters.

5. No person shall cause the disposal of sanitary or septic waste or sewage into the storm drain system from any property or residence or any type of recreational vehicle, camper, bus, boat, holding tank, portable toilet, vacuum truck or other mobile source of waste holding tank, container or device.

6. No person shall discharge or cause to be discharged anything that would result in or contribute to a violation of the city's NPDES permit and any amendment, revision or re-issuance, thereof, either separately or when combined with other discharges.

8.28.031 Illicit Connections Prohibited

A. Installation or use of illicit connections prohibited. No person shall install, maintain or use any connection to the storm drain system or act, cause, permit or suffer any non-stormwater to be discharged or conveyed through a connection to the storm drain system unless the connection has been permitted by the director. This prohibition is retroactive and applies to connections made in the past, regardless of whether made under a permit or other authorization, or whether permissible under the laws or practices applicable or prevailing at the time of the connection.

B. Removal of illicit connection from the storm drain system. If any person fails to remove an illicit connection upon notification by the director, or upon revocation of a connection permit, the director may remove such connection from the storm drain system pursuant to Section 8.28.060 of this chapter. The director may pursue the recovery of costs for such removal pursuant to Section 8.28.060 of this chapter.

8.28.032 Best Management Practices Required

A. Any person engaged in activities which will or may result in pollutants entering the City storm drain system shall undertake all control measures and BMPs as the Director may require to reduce such pollutants. Premises with a high potential threat of discharge may be required to implement a monitoring program meeting standards established by the City. Where best management practices guidelines or requirements have been adopted by any Federal, State, regional, and/or City agency, for any activity, operation, or facility which may cause or contribute to stormwater pollution or contamination, illicit discharges, and/or discharges of non-stormwater to the storm drain system, every person undertaking such activity or operation, or owning or operating such facility shall comply with such guidelines or requirements as may be identified by the Director.

B. Installation of structural BMPs. No person shall install a structural BMP for the purpose of treating, neutralizing, disposing of, monitoring or diverting to the sanitary sewer system any runoff without the approval of the director and of the Los Angeles County Sanitation District or any successor thereto. Such facilities may be subject to plan review, application and issuance of operating permits pursuant to this code.

C. BMPs to be consistent with environmental goals. No person shall install or implement a BMP that transfers pollutants to air, groundwater, surface soils and/or other media in a manner inconsistent with applicable environmental laws and regulations.

D. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to submit documentation demonstrating coverage by and compliance with any applicable permit, including copies of any notice of intent, storm water pollution prevention plans, inspection reports, monitoring results, and other information deemed necessary to assess compliance with this Chapter or any NPDES permit. Each discharger identified in an individual NPDES permit relating to stormwater discharges shall comply with and undertake all activities required by such permit.

E. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to enter into an agreement for the operation and maintenance of any structural control measures and to record such agreement with the County Recorder's office.

F. The following BMPs are required of every owner or occupant of any property:

1. No person shall leave, deposit, discharge, dump, or otherwise expose any chemical, fuel, animal waste, garbage, batteries and/or septic waste in an area where actual or potential discharge to the city streets or the storm drain system may occur. Any spills, discharge, or residues shall be removed as soon as possible and disposed of properly.
2. Runoff from landscape irrigation, air conditioning condensate, water line flushing, foundation/footing drains, individual residential car washing, dechlorinated/debrominated swimming pool/spa discharges and sidewalk washing shall be conducted in a manner which minimizes or eliminates the possibility of pollutant discharges reaching the city storm drain system or

receiving waters.

3. Runoff from washing paved areas, including but not limited to parking lots, on industrial or commercial property is prohibited unless specifically required by federal, state, or local health or safety codes and not in violation of any other provision of this code. Runoff from authorized washing of paved areas shall be minimized to the extent practicable.
4. Objects, such as motor vehicle parts, containing grease, oil, or other hazardous materials, and unsealed receptacles containing hazardous materials, shall not be stored in areas exposed to stormwater or otherwise susceptible to runoff.
5. Any machinery or equipment which is to be repaired or maintained in areas exposed to stormwater or otherwise susceptible to runoff shall be provided with containment areas to control leaks, spills, or discharges.
6. All motor vehicle parking lots with more than 25 parking spaces and located in areas exposed to stormwater or otherwise susceptible to runoff shall have debris removed by regular sweeping or other equally effective measures. Such debris shall be collected and properly disposed of.

8.28.033 Monitoring, Information Collection, and Reporting

A. The Director may require any person discharging or causing, allowing, or facilitating a discharge to the storm drain system or receiving waters to take any or all of the following actions:

1. to submit information necessary to comply with the Permit or to confirm that person's compliance with this Chapter;
2. to monitor discharges and submit reports of discharge activities;
3. to maintain records of monitoring and discharging; and
4. to take any other action necessary to comply with the Permit or this Chapter.

B. Notwithstanding any other requirement of law, any known or suspected release of materials, pollutants or waste, which may result in pollutants or non-stormwater discharges entering storm water, the storm drain system or waters of the state or United States, shall be reported immediately in the following manner by any person in charge of a premises or responsible for the premises' emergency response:

1. The release of a hazardous material shall be immediately reported to emergency services by emergency dispatch services (911).
2. The release of a nonhazardous material shall be reported as follows:
   a. to the Director and to the 24-hour storm water hotline by telephone no later than 5:00 P.M. on the same business day;
   b. if the release occurs after 5:00 P.M. on a weekday, on a weekend or holiday, to the 24-hour storm water hotline on the same day and to the Director by telephone on the next business day;

c. a written notification of the release shall also be made to the Director within ten business days of the release. A copy of the written notice shall be retained at the premises for at least three (3) years. The notification shall include a detailed written report describing the cause of the discharge, corrective action taken and measures to be taken to prevent future occurrences, and measures taken to remediate the effects of the discharge. Such notification shall not relieve the discharger or permittee from liability or fines incurred as a result of the uncontrolled discharge.

3. In addition to the above requirements, the release of any hazardous materials or substances, sewage, oil, or petroleum to any waters of the state, or discharged or deposited where it is or probably will be discharged in or on any waters of the state, shall be reported to the State Office of Emergency Services, as required by Sections 13271 and 13272 of California Water Code.

8.28.034 Control of Runoff Required – Industrial and Commercial Facilities

A. Prohibited discharges from industrial or commercial activity. Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. The following discharges from industrial or commercial activities are prohibited unless the discharge is in compliance with a NPDES permit:

1. Discharge of wash waters to the storm drain system from the cleaning of gas stations, auto repair garages, or other types of auto repair facilities;
2. Discharge of wastewater to the storm drain system from mobile auto washing, steam cleaning, mobile carpet cleaning, or other such mobile commercial and industrial operations;
3. Discharge to the storm drain system from areas where repair of machinery and equipment, including motor vehicles, which are visibly leaking oil, fluids or coolants is undertaken;
4. Discharge to the storm drain system from storage areas for materials containing grease, oil, or hazardous materials, or from uncovered receptacles containing hazardous materials, grease, or oil;
5. Discharge of commercial/public swimming pool filter backwash to the storm drain system;
6. Discharge from the washing of toxic materials from paved or unpaved areas to the storm drain system;
7. Discharge from the washing out of concrete trucks to the storm drain system; and
8. Discharge from the washing or rinsing of restaurant mats, equipment or garbage bins or cans in such a manner that causes non-stormwater to enter the storm drain system.

B. Industrial/commercial facility sources required to obtain a NPDES permit. Any industrial or commercial facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

C. Best management practices for industrial and commercial facilities. All industrial and commercial facilities shall implement BMPs which will effectively prevent the direct or indirect discharge of pollutants to the storm drain system or receiving waters to the maximum extent practicable. Minimum BMPs applicable to all industrial and commercial facilities include, but are not limited to:

1. Termination of all non-stormwater discharge to the storm drain system that is not specifically authorized by a NPDES permit;
2. Exercising general good housekeeping practices;
3. Incorporating regular scheduled preventative maintenance into operations;
4. Maintaining spill prevention and control procedures;
5. Implementing soil erosion control;
6. Posting on-site private storm drains to indicate that they are not to receive liquid, solid wastes or pollutants;
7. Implementing regular cleaning of the on-site private storm drain system; and
8. Insuring that stormwater runoff is directed away from operating, processing, fueling, cleaning and storage areas.

8.28.035 Control of Runoff Required – Municipal Facilities

A. Public facility sources required to obtain a NPDES permit. Any public facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

8.28.040 Control of Runoff Required – Construction Activity

A. Stormwater and runoff pollution mitigation for construction activity. No person shall commence any construction activity for which a permit is required by this Chapter or any

law or regulation without implementing all stormwater and runoff pollution mitigation measures required by such permit(s), law, regulation or this Chapter. In addition to any other requirements set forth in this Chapter, prior to obtaining a grading or building permit, each operator of any construction activity shall submit evidence to the Director that all applicable permits have been obtained, including but not limited to the General Construction Activities Storm Water Permit and State Water Board 401 Water Quality Certification.

B. No grading permit shall be issued for any development with a disturbed area of one (1) acre or greater or which is part of a larger common plan of development unless the applicant can show that (i) a Notice of Intent to comply with the State Construction Activity Storm Water Permit has been filed and (ii) a Storm Water Pollution Prevention Plan has been prepared. The City may adopt regulations establishing controls on the volume and rate of stormwater runoff from new developments and redevelopments of less than one (1) acre as may be appropriate to minimize the discharge and transport of pollutants.

C. Prior to obtaining a grading or building permit, each operator of any construction site of less than one (1) acre shall cause to be prepared and submitted to the City an erosion and sediment control plan which satisfies the requirements of the Permit, to ensure that discharges of pollutants are effectively prohibited and will not cause or contribute to an exceedance of water quality standards. A SWPPP prepared in accordance with the General Construction Permit may be substituted for an erosion and sediment control plan. No operator of any construction activity shall commence any construction activity prior to receiving written approval of the erosion and sediment control plan from the Director.

D. Best management practices for construction activity. All BMPs required as a condition of any NPDES permit for construction activity granted by U.S. EPA, the State Water Resources Control Board, or a regional board or pursuant to this code shall be maintained in full force and effect during the term of the project, unless authorized by the director.

8.28.041 Control of Runoff Required – New Development and Redevelopment

A. Prior to construction of a development, redevelopment or new development project, such project shall be evaluated by the City for its potential to discharge pollutants to the storm drain system or to receiving waters based on its intended land use. Such evaluation shall be conducted in accordance with development planning requirements established by the Regional Board or its Executive Officer, pursuant to the Municipal NPDES Permit. No discretionary permit may be issued for any new development or redevelopment project until the Director finds that the project plans comply with the LID /SUSMP requirements set forth in the Permit and in this Chapter.

B. Once a development, redevelopment or new development project has been evaluated for its potential to discharge pollutants to the storm drain system or receiving waters, the City shall require appropriate BMPs to be implemented during construction

and following project completion. The prescription of BMPs shall be in keeping with Standard Urban Storm Water Mitigation Plan requirements established by the regional board or its executive officer, pursuant to the municipal NPDES permit and with this Chapter.

8.28.050 Stormwater Pollution Control Measures for Development Planning and Construction Activities

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City of Claremont to further define and adopt stormwater pollution control measures, develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, alternative compliance for technical infeasibility from the requirements of the onsite retention requirements, and collect funds for projects that are granted alternative compliance for technical infeasibility. Except as otherwise provided herein, the City of Claremont shall administer, implement and enforce the provisions of this Section.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of Section 8.28.050:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities of 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(D) Effective Date. The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 became effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;
d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall be in accordance with the City of Claremont's Green Street Policy and the USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
   i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
   ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
b. When, as determined by the City of Claremont, 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:
   i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.
   ii. Locations where seasonal high groundwater is within five (5) to ten (10) feet of surface grade;
   iii. Locations within 100 feet of a groundwater well used for drinking water;
   iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
   v. Locations with potential geotechnical hazards;
   vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.
c. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications and requirements specified in the Los Angeles County Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the City of Claremont to determine eligibility.

d. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or

ii. The one-year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

e. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the City of Claremont to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, “Multi-Phased Project” shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(F) Non-Planning Priority Projects. For new development or redevelopment projects not meeting the “Planning Priority Projects” thresholds, but which may potentially have adverse impacts on post-development storm water quality, a site-specific plan including post-construction design, source and/or treatment control to mitigate storm water pollution shall be required where one or more of the following project characteristics exist:

a. Vehicle or equipment fueling areas;
b. Vehicle or equipment maintenance areas, including washing and repair;
c. Commercial or industrial waste handling or storage;
d. Outdoor handling or storage of hazardous materials;
e. Outdoor manufacturing areas;
f. Outdoor food handling or processing;
g. Outdoor animal car, confinement, or slaughter; or
h. Outdoor horticultural activities.

(G) Other Agencies of the City of Claremont. All City of Claremont departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and

Redevelopment projects and report their activities annually to the Director of Community Development.

(H) Certification. As a condition for issuing a certificate of occupancy for a new development or redevelopment project the Director, shall require the applicant, facility operators and/or owners, as appropriate, to construct and/or employ all stormwater control BMPs identified in the approved development planning documents and submit a signed certification stating that the project site and all BMPs will be employed and maintained in compliance with the City's LID/SUSMP ordinance and other applicable regulatory requirements until the responsibility for such maintenance is legally transferred.

(I) Fees. City Council may establish fees for services provided under this Chapter, as authorized under Sections 66016 and 66018 of the California Government Code.

8.28.060 Violations and Enforcement

A. Enforcement - Director's powers and duties. The director shall have primary responsibility for the enforcement of the regulations in this chapter. The director may enter into agreements with other departments for the purpose of implementing this chapter.

B. Identification for inspectors and maintenance personnel. The director shall provide means of identification to inspectors and storm drain system maintenance personnel which shall identify them as such. Inspectors and storm drain system maintenance personnel shall identify themselves upon request in the performance of their duties under this chapter.

C. Obstructing access to facilities prohibited. No object, whether a permanent structure, a temporary structure, or any object which is difficult to remove, shall be located on any storm drain easement or placed in such a position as to interfere with the ready and easy access to any facility conveying stormwater or runoff as described in this chapter unless authority is granted by the director. Upon notification by the director, any such obstruction shall be immediately removed by the responsible party at no expense to the city, and shall not be replaced.

D. Inspection to ascertain compliance - Access required.

1. The director may inspect in a manner authorized by law, as often as he/she deems necessary, any publicly or privately owned storm drain, storm drain connection, street, gutter, yard, plant, storage facility, building, BMP, NPDES permit, SWPPP, stormwater management plan, construction activity or other facility to ascertain whether such facilities, plans, or protective measures are in place, maintained and operated in accordance with the provisions of this chapter.

2. In the course of such inspection, the director may:

a. Inspect, sample, make flow measurements of any runoff, discharge or threatened discharge;

b. Place on the premises devices for runoff or discharge sampling, monitoring, flow

measuring or metering;
c. Inspect, copy, or examine any records, reports, plans, test results or other information required to carry out the provisions of this chapter, to the extent allowed by law; and
d. Photography any materials, storage areas, waste, waste containers, BMP, vehicle, connection, discharge, runoff and/or violation discovered during an inspection.

E. Interference with inspector prohibited. No person shall, during reasonable hours, refuse, restrict, resist or attempt to resist the entrance of the director into any building, factory, plant, yard, construction project or other place or portions thereof in the performance of his/her duty within the powers conferred upon him/her by law.

F. Notice to correct violations - Director may take action. The director may issue a notice of violation and order to comply to achieve compliance with the provisions of this chapter. Failure to comply with the terms and conditions of a notice of violation and order to comply shall constitute a violation of this chapter. If a person fails to comply with an order issued under this section to remove an illicit connection, obstruction or other encroachment to the storm drain system, the director may perform the work as provided in Section 8.28.060 H. of this chapter. The person responsible for installing or operating such a facility shall be liable to the city for the cost of such work, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

G. Violation a public nuisance. Any discharge in violation of this chapter, any illicit connection, and/or any violation of runoff management requirements shall constitute a threat to public health and safety and is declared and deemed a public nuisance.

H. Nuisance abatement - Costs. Whenever a nuisance shall be found to exist on any premises, the director may summarily abate such nuisance upon determination that the nuisance constitutes an immediate threat to public health or safety, or the director may notify in writing the person(s) having control of or acting as agent for such premises to abate or remove such nuisance within such time as is stated on the notice. Upon the failure or refusal of such person(s) to comply with the notice, the director may abate such nuisance in the manner provided by law. The person(s) having control of such premises, in addition to the penalties provided by this chapter, shall be liable to the city for any costs incurred by the city fur such abatement, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

I. Violation - Penalty. Any person violating any provision of this chapter shall be guilty of a misdemeanor. Such violation shall be punishable by a fine of not more than $1,000.00 or by imprisonment in the county jail for a period not to exceed six months. Each day during any portion of which such violation is committed, continued or permitted shall constitute a separate offense and shall be punishable as such.

J. Penalties not exclusive. Penalties under this chapter are in addition to, and do not supercede or limit, any and all other penalties or remedies provided by law.

K. Conflicts with other code sections. The provisions of this chapter shall control over any inconsistent or conflicting provisions of this code.

L. Severability. If any portion of this chapter or the application thereof to any person or

circumstance is held invalid, the remainder of this chapter, and the application of such provisions to other persons or circumstances, shall not be affected thereby. (00-07).38.28

SECTION 2. The City Council finds that the adoption of this Ordinance amending the Municipal Code is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Ordinance since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the entirety of the proposed Ordinance is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the proposed Ordinance is not a "project" pursuant to CEQA since it can be seen with certainty that no adverse effect on the physical environment would occur pursuant to the proposed Ordinance since the only effects on the environment would be to improve water quality in stormwater channel discharges, and these effects are beneficial, and not adverse (see State CEQA Guidelines section 15061(b)(3)). City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Ordinance.

SECTION 3. The Mayor shall sign this ordinance and the City Clerk shall attest and certify to the passage and adoption of it, and within fifteen (15) days, publish in the Claremont Courier, a semi-weekly newspaper of general circulation, printed, published and circulated in the City of Claremont, and thirty (30) days thereafter it shall take effect and be in force.

PASSED, APPROVED and ADOPTED this ______ day of _____________, 2014.

____
Mayor, City of Claremont

ATTEST:

____
City Clerk, City of Claremont

APPROVED AS TO FORM:

____
City Attorney, City of Claremont

CLAREMONT CITY COUNCIL
Certificate of Action

I, Jamie Costanza, Deputy City Clerk of the City of Claremont, California, hereby certify, under penalty of perjury, that the following is a true and correct copy of action taken by the City Council of the City of Claremont at a regular meeting of said Council held June 24, 2014:

Municipal Separate Storm Sewer System (MS4) Permit; Authorization to Submit Draft Watershed Management Plan (WMP) and Coordinated Integrated Monitoring Plan (CIMP) to the Los Angeles Regional Water Quality Control Board; Amendment to Chapter 8.28 (Stormwater and Runoff Pollution Control of the Claremont Municipal Code; Adoption of the City of Claremont Green Streets Policy
Councilmember Calaycay moved to authorize the submittal of the Draft WMP and CIMP with the Los Angeles Regional Water Quality Control Board, introduced AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLSIHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF; waived further reading, placed the Ordinance on first reading, referred the Ordinance to the City Attorney for not less than five days, and direct staff to publish a summary of the Ordinance in the local newspaper; adopted Resolution No. 2014-53, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY; and allowed the City of Claremont logo to be affixed to the letter presented by the League of California Cities and California Contract Cities, thereby supporting the use of California Water Bond funding for stormwater and urban runoff projects, seconded by Councilmember Pedroza, and carried on a roll call vote as follows:

AYES: ***Councilmember – Calaycay, Lyons, Nasiali, Pedroza, Schroeder***
NOES: ***Councilmember – None***
ABSENT: ***Councilmember – None***

Executed this 26th day of June, 2014, at Claremont, California.

Jamie Costanza

Jamie Costanza
Deputy City Clerk
City of Claremont

City of La Verne Green Streets Policy-Draft

Purpose

The City of La Verne shall consider implementing green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects. This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that can provide water quality improvement by preventing stormwater runoff through the use of vegetated facilities. Through the use of infiltration, biofiltration and storage mechanisms, a green street can provide water quality benefits, replenish groundwater, create attractive streetscapes, connect neighborhoods, create parks and wildlife habitats, and provide pedestrian and bicycle access.

Policy

A. Application. The City of La Verne shall require that new public and private construction of 10,000 sq. ft. or more of impervious surface area and road development that results in the creation or addition or replacement of 5,000 sq. ft. or more of impervious surface area on an already developed site consider green street implementation. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of La Verne shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs for both private and public projects.

C. Best Management Practices (BMPs). The City of La Verne shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the City of La Verne for use in public and private developments.

D. Retrofit Scope. The City of La Verne shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of La Verne shall incorporate aspects of green streets into internal annual staff trainings.

Exhibit A – Ordinance No. XXXX
City of La Verne Zoning Amendment Case No. XXX-XXZA
Amending Title 13 to add Chapter 13.60

Low Impact Development

Title 13 of the La Verne is hereby amended to add the following Chapter:

Chapter 13.60 Low Impact Development

13.60.010 Title

This Chapter shall be known as the "City of La Verne Low Impact Development (LID) Ordinance" and may be so cited.

13.60.020 Purpose

It is the purpose of this chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development toward existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts for stormwater runoff on the biological integrity of Natural Drainage Systems and the Beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMP's), (including Source Control BMP's such as good housekeeping practices), LID Strategies, and Treatment Control BMP's.

F. Properly select, design and maintain LID and Hydromodification Control BMP's to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMP's to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

   1. On-site infiltration bioretention and/or rainfall harvest and use.

   2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

13.60.030 Findings

The City of La Verne hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City have the potential, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stromwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

13.60.040 Definitions

Except as specifically provided herein, any term used in this Chapter shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this Chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this Chapter.

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater.

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments.

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged t the receiving water.

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as

used in this Chapter is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMP's with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMP's include bioretention systems with an underdrain and bioswales.

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum two (2) foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with as overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration.

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

"City" means the City of La Verne.

"City Engineer" means the City Engineer for the City of La Verne.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line of grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading, or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan.

“Control” means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

“Conveyance Facility” means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

“Design Engineer” means the registered professional engineer responsible for the design of the stormwater management plan.

“Detention System” means a system, which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

“Development” means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit, or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately project public health and safety.

“Directly Adjacent” means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

“Director” means the Director of Public Works for the City of La Verne.

“Discharge” means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

“Disturbed Area” means an area that is altered as a result of clearing, grading, and/or excavation.

“Engineered Site Grading Plan” means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and proposed stormwater management and measures which are prepared to ensure that the objectives of this Chapter are met.

“Flow-through BMP’s” means modular, vault type “high flow biotreatment” devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

“General Construction Activities Storm Water Permit (GCASP)” means the general NPDES permit adopted by the State Board, which authorizes the discharge of stormwater from construction activities under certain conditions.

“General Industrial Activities Storm Water Permit (GIASP)” means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

“Grading” means any stripping, excavation, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

“Green Roof” means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall that is intercepted by vegetation leaves through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof systems planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

“Hazardous Material(s)” means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

“Hillside” means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

“Hydromodification” means the alteration of a natural drainage system through a change in the system’s flow characteristics.

“Impervious Surface” means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

“Industrial Park” means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry uses.

“Infiltration BMP” means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMP’s include infiltration basins, dry wells, and pervious pavement.

“LID” means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

“Maximum Extent Practicable or MEP” means the extent, which the City can reduce, the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMP’s, and rejecting applicable BMP’s only where: other effective BMP’s will serve the same purpose, the BMP’s would not be technically feasible; or the cost would be prohibitive. Factors considered include, but are not limited to:

A. Effectiveness: Whether the BMP addresses a pollutant of concern.

B. Regulatory Compliance: Whether the BMP complies with storm water regulation, as well as other environmental regulations.

C. Public Acceptance: Whether the BMP has public support.

D. Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved.

E. Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources.

“MS4” means Municipal separate Storm Drain Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

A. Owned or operated by a State, City, Town, Borough, County, Parish, District, Association, or other public body (created by to pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State Law such as sewer districts, flood control district or drainage districts, or similar entity, or an Indian Tribe or an authorized Indian Tribal Organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

B. Designed or used for collecting stormwater;

C. Which is not a combined sewer; and

D. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

“National Pollutant Discharge Elimination System (NPDES)” means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Sections 307, 402, 318, and 405. The term includes an “approved program”.

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.

"New Development" means land disturbing activities, structural development, including construction or installation of a building or structure, creation of impervious surfaces, and land subdivision.

"Non-stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater.

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for business, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

"Planning Priority Projects" means development projects subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

1. Commercial and industrial waste such as: fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge.

2. Metals such as: cadmium, lead, zinc, copper, silver, nickel, chromium, and non-metals such as phosphorus and arsenic.

3. Petroleum hydrocarbons such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease.

4. Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

5. Animal wastes such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities.

6. Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

"Public Works Department" means the City of La Verne Public Works Department.

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA.

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses.

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged.

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of a facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils.

"Retention" means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands, and in which water is removed through infiltration and/or evaporation processes.

"Routine Maintenance" routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

2. Perform as needed restoration work to preserve the original design grade, integrity, and hydraulic capacity of flood control facilities.

3. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such project results in increased capacity.

5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.
*Update existing lines includes replacing existing lines with new materials or pipes.
**New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

"Sediment" means mineral or organic matter that has been removed from its site of origin by the process of soil erosion, is in suspension in water, or is being transported.

"Significant Ecological Areas (SEA's)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity. Areas are designated as SEA's, if they possess one or more of the following criteria:

A. The habitiat of rare, endangered, and threatened plant and animal species.

B. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

C. Biotic communities, vegetative associations, and habitat of plant and animal species that are wither one of a kind or are restricted in distribution in Los Angeles County.

D. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

E. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in population or community.

F. Areas important as game species habitat or as fisheries.

G. Areas that would provide for preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

H. Special Areas.

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

“Storm Drain System” means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose to collecting, storing, transporting, or disposing of stormwater and are located within the City of La Verne.

“Storm Water or Stormwater” means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in it’s meaning, this term may be spelled or written as one word or two separate words.

“Stormwater Runoff” means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

“SUSMP” means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES permit Order No. 01-183, NPDES No. CAS004001, and required plans that designate best management practices (BMP’s) that must be used in specified categories of development projects.

“Urban Runoff” means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

“Water Quality Design Storm Event” means any of the volumetric or flow rate based design storm events for water quality BMP’s identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

13.60.050 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this chapter are complex in nature. Effort has been made to simplify terms the extent the subject matter permits.

13.60.060 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No.

R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more of surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City's Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharge directly to a Significant Ecological Area (SEA), where the development will:

    i. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

    ii. Create 2,500 square feet of impervious surface area.

11. Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

    i. Conserve natural areas.

    ii. Protect slopes and channels.

    iii. Provide storm drain system stenciling and signage.

    iv. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

    v. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development.

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, which does not disturb additional area and maintains the original grade and alignment, is considered a routine

maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwellings and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

13.60.070 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 13.60.060 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) on-site through:

   1. Minimizing the impervious surface area; and

   2. Controlling runoff form impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

13.60.080 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvesting and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltrantion systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration sue to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site, as calculated by Equation 1 below:

   Equation 1:
   Bv= 1.5 * [SWQDv - Rv]

   Where:

   Bv = Biofiltration volume

SWQDv = The stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater

Rv = Volume reliably retained on-site

B. Offsite infiltration – Use Infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:

Mv = 1.0 * [SWQDv - Rv]

Where:

Mv = Mitigation volume

SWQDv = The volume of stormwater runoff reliably retained on-site.

C. Offsite Projects – Retrofit existing Development – Use infiltration, bioretention, rainfall harvesting and use and/or biofiltration BMPs to retrofit an existing development, with similar and uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stromwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

13.60.090 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

    1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting

forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If the City Engineer determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, the City Engineer shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

B. If the plan is approved, the City will require the following:

1. The applicant shall provide copies of all necessary State, Federal, or local permits relating to stormwater management to the City.

2. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request by the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Recorder prior to issuance of occupancy.

3. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred: and either:

   i. A signed statement from the pubic entity assuming responsibility for BMP maintenance; or

   ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct an maintenance inspection at least once a year; or

   iii. Written text in project covenants, conditions, and restrictions (CC&R's) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association.

4. The applicant shall post cash or a letter of credit in an amount determined by the City Engineer up to 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

5. This deposit shall be returned to the applicant (in case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

6. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm and stormwater BMP's shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

13.60.100 Plan Review Fees

The City Council from time to time shall establish by resolution filing fees for applications, which shall be paid to the City at the time of filing. No application shall be considered filed until the established fees have been paid to the City. No fee will be required in the case of proceedings initiated by either the Council or Planning Commission.

13.60.110 Maintenance Agreement

A. Maintenance Agreement Required – A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMP's which meet the performance standards provided in the this section and identified in the Los Angeles County Municipal Storm Water Permit No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

B. Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMP's shall be undertaken.

C. Maintenance Agreement Provisions shall include:

    1. The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMP's, with a detailed annual estimated budget for the initial two (2) years, and a clear statement

that only future maintenance activities in accordance with the Maintenance Agreement shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement shall be provided by the party responsible for maintenance to the City at least 14 days in advance of commencing work.

2. The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMP's.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violation, as a public nuisance, pursuant to the procedures set forth in Chapter 1.04.120 of the La Verne Municipal Code.

D. A fully executed "Maintenance Covenant for Permanent BMP's Requirements" shall be recorded with the Los Angeles County Clerk and be submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant document shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMP's for post construction. The information to be provided for this exhibit shall include but not be limited to:

1. 81/2" x 11" exhibits with recorded property owner information.

2. Types of BMP's (i.e. site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without property owner being aware of the ramifications to BMP implementation.

3. A plan that clearly depicts location of BMP's, especially those located below grade.

4. A matrix depicting the types of BMP's, frequency of inspection, type of maintenance required, and if proprietary BMP's, the company information to perform the necessary maintenance.

5. Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.

6. Understanding the documentation of proper maintenance must be presented to the City upon request.

13.60.120 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provision of Chapter 1.24 of the La Verne Municipal Code.

13.60.130 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participation in the work.

13.60.140 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

13.60.150 Emergency Measures

When emergency measures are necessary to moderate a nuisance, to protect public safety, heath and welfare, and/or prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all such costs.

13.60.160 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

City of Pomona
Green Streets Policy

Purpose

The City of Pomona shall implement green street Best Management Practice (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff while also providing design elements that creates attractive streetscapes. Green Streets can foster unique and attractive streetscapes that protect and enhance neighborhood livability and integrate, rather than separate, the built and natural environments. Green Streets encourage the planning of landscapes and vegetation. City landscapes and trees contribute environmental benefits such as reduced summer air temperatures, reductions in global warming through carbon sequestration, air pollution screening, and wildlife habitat corridors, in addition to stormwater surface runoff reduction.

Policy

A. Application. The City of Pomona shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are major arterials as defined in the City's General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are substantially maintained.

B. Amenities. The City of Pomona shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The City of Pomona shall use the City of Los Angeles Green Streets Guidance, USEPAs *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Street* or equivalent guidance developed by the City of Pomona for use in public and private developments.

D. Retrofit Scope. The City of Pomona shall use the City's Watershed Management Program to identify opportunities for Green Street BMP retrofits. Final decisions regarding

implementation will be determined by the Public Works Director and/or designee based on the availability of adequate funding.

E. Outreach. The City of Pomona shall educate citizens, businesses, and the development community/industry about Green Streets and how they can serve as urban gateways to enhance, improve, and connect neighborhoods to encourage support, demand and funding for these projects.

F. Training. The City of Pomona shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

WHEREAS, the City is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity;

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175 ("MS4 Permit"), issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Pomona; and

WHEREAS, to comply with the mandates of the MS4 Permit, the City shall adopt a Low Impact Development (LID) ordinances.

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Pomona, California, as follows:

SECTION 1. That Ordinance No. 4006, also known as the Pomona City Code, is hereby amended to include the addition of Article VI, "Low Impact Development" to Chapter 74, "Buildings and Building Regulations" as follows:

ARTICLE VI. LOW IMPACT DEVELOPMENT

DIVISION 1. GENERALLY

Sec. 74-310. Title.

This Ordinance shall be known as the "City of Pomona Low Impact Development (LID) Ordinance" and may be so cited.

Sec. 74-311. Findings.

The City of Pomona finds that:

(1) Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

(2) Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased non-point source pollutant loading to the receiving waterbodies and the beaches.

(3) Stormwater runoff produced by land development contributes to increased quantities of waterborne pollutants.

(4) Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed and the Santa Ana River Watershed.

(5) Increase stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

(6) Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

(7) Adopting the standards, criteria, and procedures contained in this Article and implementing the same will address many of the deleterious effects of stormwater runoff.

Sec. 74-312. Purpose.

The provisions of this Article are adopted pursuant to the Federal Water Pollution Control Act, also known as the "Clean Water Act," codified and amended at 33 U.S.C. 1251 *et seq*. The intent of this Article is to enhance and protect the water quality of the receiving waters of the United States in a manner that is consistent with the Clean Water Act (and acts amendatory thereof or supplementary thereto), applicable implementing regulations, and the Municipal NPDES permit (as defined below, and any amendment, revision, or re-issuance thereof). It is the purpose of this Article to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

(1) Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

(2) Minimize the adverse impacts from stormwater runoff on the biological integrity of natural drainage systems and the beneficial uses of waterbodies.

(3) Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration, and rainfall harvest and use.

(4) Maintain existing riparian buffers and enhance riparian buffers when possible.

(5) Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs, defined below) including Source Control BMPs such as good housekeeping practices, LID strategies, and Treatment Control BMPs.

(6) Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

(7) Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

(a) On-site infiltration, bioretention and/or rainfall harvest and use.

(b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

Sec. 74-313. Definitions.

The following terms, phrases, words, and derivatives shall have the meaning defined below:

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and any subsequent amendments.

Beneficial Use means the existing or potential use of receiving waters as designated by the Los Angeles or Santa Ana Regional Water Quality Control Boards in their respective basin plans for the County.

Best Management Practices or BMPs are practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water.

City means the City of Pomona.

City Engineer means the City Engineer for the City of Pomona.

Conveyance Facility means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

Design Engineer means the registered professional engineer responsible for the design of the stormwater management plan.

Detention System means a system which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

Development means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Director means the Director of Public Works for City of Pomona.

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, or excavation.

Engineered Site Grading Plan means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and propose stormwater management and measures which are prepared to ensure that the objectives of this Article are met.

Grading means any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

Hardscape means any durable, pervious or impervious surface material, including paving for pedestrians and vehicles.

Hydromodification means the alteration of a natural drainage system through a change in the system's flow characteristics.

Impervious Surface means a surface that does not allow stormwater runoff to slowly perchlorate into the ground.

Low Impact Development or LID means technologies and practices that are part of a sustainable stormwater management strategy that controls, retains or filters stormwater and urban runoff on site.

Maximum Extent Practicable or *MEP* means the extent to which the City can reduce the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMPs, and rejecting applicable BMPs only where: (i) other effective BMPs will serve the same purpose; (ii) the BMPs would not be technically feasible; or (iii) the cost would be prohibitive. Factors considered include, but are not limited to:

(1) Effectiveness: Whether the BMP addresses a pollutant of concern

(2) Regulatory Compliance: Whether the BMP complies with storm water regulations, as well as other environmental regulations

(3) Public acceptance: Whether the BMP has public support

(4) Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved

(5) Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources

Municipal NPDES Permit means California Regional Water Quality Control Board, Los Angeles Region, Order No. R4-2012-0175, NPDES Permit No. CAS004001 Waste Discharge Requirements For Municipal Separate Storm Sewer System (MS4) Discharge Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach MS4, and any amendment thereto or re-issuance thereof.

Municipal Separate Storm Sewer System (referred to herein as "MS4"), means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(1) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved

management agency under section 208 of the CWA that discharges to waters of the United States;

(2) Designed or used for collecting or conveying stormwater;

(3) Which is not a combined sewer; and

(4) Which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR Section 122.2.(40 CFR Section 122.26(b)(8)).

Natural Drainage System means any unlined or unimproved (not engineered) creek, stream, river, or similar waterway.

Non-storm Water Discharge means any fluid discharge to the storm drain system and/or receiving waters that is not composed entirely of storm water but may not necessarily be an illicit discharge.

NPDES or *National Pollutant Discharge Elimination System* means the national permitting program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Clean Water Act (CWA) §307, 402, 318, and 405. The term includes an "approved program."

Mandated by Congress under the Clean Water Act, the NPDES Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges which adversely affect the quality of our nation's waters. The program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

Pollutants of Concern means chemical, physical, or biological components of stormwater that impair the beneficial uses of receiving waters, including those defined in Section 502(6) of the Federal Water Pollution Control Act (“Clean Water Act,” 33 U.S.C. Section 1362(6)), and incorporated by reference into California Water Code Section 13373.

Public Works Department means the City of Pomona Public Works Department.

Receiving Water means a “water of the United States” (as defined in 33 C.F.R. section 328.3(a)(7)) into which waste and/or pollutants are or may be discharged.

Retention means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands and in which water is removed through infiltration and/or evaporation processes.

Runoff means any runoff including stormwater and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically comprised of base flow (either contaminated with pollutants or uncontaminated) and nuisance flows.

Sediment means mineral or organic particulate matter that has been removed from its site of origin by the processes of soil erosion, is in suspension in water, or is being transported.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Storm Drain means a conduit, pipe, swale, natural channel, or man-made structure which serves to transport stormwater runoff. Storm drains may be either enclosed or open.

Stormwater means runoff that occurs as the result of rainfall.

Stormwater Quality Design Volume (SWQDv) means the runoff generated by the greater of either:

(1) The 0.75-inch, 24-hour rain event; or

(2) The 85^{th} percentile, 24-hour rain event, as determined from the *Los Angeles County Department of Public Works 85^{th} Percentile Precipitation Isohyetal Map*.

Urban Runoff means surface flows, other than stormwater, emanating from development.

Water Quality Design Storm Event means any of the volumetric or flow rate based design storm events for water quality BMP's identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

DIVISION 2. NEW DEVELOPMENTS AND REDEVELOPMENT PROJECTS PROVISIONS

Sec. 74-314. Applicability.

These procedures and standards set forth in this Article, the BMP design information found in the Los Angeles County Municipal Storm Water Permit, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the City of Pomona's authority to adopt and publish or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) All development projects equal to one (1) acre or greater of disturbed area and adding more than ten thousand (10,000) square feet of impervious surface area;

(2) Industrial parks ten thousand (10,000) square feet or more of surface area;

(3) Commercial malls ten thousand (10,000) square feet or more of surface area;

(4) Retail gasoline outlets five thousand (5,000) square feet or more of surface area.

(5) Restaurants (SIC 5812) five thousand (5,000) square feet or more of surface area;

(6) Parking lots five thousand (5,000) square feet or more of impervious surface area, or with twenty-five (25) or more parking spaces;

(7) Street and road construction of ten thousand (10,000) square feet or more of surface area shall follow the City of Pomona Green Street Policy to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects;

(8) Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with five thousand (5,000) square feet or more of surface area;

(9) New development projects located in or directly adjacent to, or discharging directly to the proposed Significant Ecological Area ("SEA") which will:

   (a) discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

   (b) create two thousand five hundred (2,500) square feet or more of impervious surface area; and

(10) Redevelopment Projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below;

(11) Redevelopment projects located in or within 200 ft. of, or discharging directly to a Significant Ecological Area (SEA) where the development will:

(a) Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

(b) Create 2,500 square feet or more of impervious surface area.

(12) Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

(a) Conserve natural areas.

(b) Protect slopes and channels.

(c) Provide storm drain system stenciling and signage.

(d) Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

(e) Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Article for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) Land disturbing activity that results in the creation or addition or replacement of five thousand (5,000) square feet or more of impervious surface area on an already developed site.

(2) Redevelopment project that result in an alteration to more than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

(3) Redevelopment project that result in an alteration of less than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire project site.

(4) Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

(5) Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace Ten Thousand (10,000) square feet of impervious surface area.

Sec. 74-315. Project Performance Criteria.

All development projects that fit the project criteria listed above in Section 74-331 of this Article shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) (as defined in definitions) on-site through:

(1) Minimizing the impervious surface area; and

(2) Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

Sec 74-316. Alternative Compliance for Technical Infeasibility.

(a) To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain one hundred percent (100%) of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and the compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

(b) When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use. Alternative compliance measures include the following:

(1) On-Site Biofiltration. Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the

portion of the SWQDv that is not reliably retained on site, as calculated by Equation 1 below:

Equation 1:
Bv=1.5* [SWQDv-Rv)
Where:
Bv = Biofiltraton volume
SWQDv= the stormwater runoff from a 0.75 inch, 24-hour storm or the 85^{th} percentile storm, whichever is greater
Rv=volume reliably retained on-site

(2) Off-site Infiltration. Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume or stormwater runoff reliably retained on-site, at an approved offsite project. The required off-site mitigation volume shall be calculated by Equation 2 below:

Equation 2:
Mv=1.0*[SWQDv-Rv]
Where:
Mv=Mitigation Volume
SWQDv=Runoff from the 0.75 inch, 24-hour storm event or the 85^{th} percentile storm, whichever is greater
Rv=the volume of stormwater runoff reliably retained on-site

(3) Offsite Project. Retrofit existing Development. Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable of higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof.

(4) Other alternative compliance requirements are detailed in the Los Angeles County Municipal Stormwater Permit Order No. R4-2012-0175.

(c) Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles Municipal Storm Water Permit Order N. R4-2012-0175, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof.

Secs. 74-317 – 74-330. Reserved.

DIVISION 4. PLAN REVIEW REQUIREMENTS, FEES, AND MAINTENANCE

Sec. 74-331. Review Procedures.

(a) All stormwater plans shall be subject to review and approval by the City Engineer.

(1) If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding a recommendation or approval, and will state the changes necessary to obtain approval.

(2) If Staff determines that all of the required information has not been received, the proprietor may request additional time to allow for the submittal of the required information.

(3) If all of the required information has been received, Staff shall recommend approval, recommend approval with conditions, or recommend denial of the Stormwater Plan.

(a) If the Plan is approved, the City will require the following:

(1) The applicant will provide copies of all necessary state, federal, or local permits relating to the Project for Stormwater Management to the City.

(2) A satisfactory Maintenance Covenant Agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The Maintenance Covenant shall include a listing of the BMPs, locations, and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain records for a period of two (2) years. Maintenance Agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk prior to issuance of occupancy.

(3) A satisfactory Maintenance Covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred, and either:

- A signed statement from the public entity assuming responsibility for BMP maintenance; or
- Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or
- Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association (HOA). Residential development with HOAs shall include a Stormwater Pollution Prevention Plan and compliance elements in the CCRs.

Sec. 74-332. Review Fees.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of Pomona including the costs of on-site inspections.

Sec. 74-333. Maintenance Agreement Required.

(a) Maintenance Agreement Required. A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles County Municipal Storm Water Permit No. R-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

(b) Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

(c) Maintenance Agreement Provisions:

(1) The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPS, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the Maintenance Agreement Plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement Plan shall be provided by the party responsible for maintenance to the City of Pomona at least 14 days in advance of commencing work.

(2) The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMPs.

(3) If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Article and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 18 of the Municipal Code.

(d) A fully executed "Maintenance Covenant for Permanent BMPs Requirements" shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMPs

for post construction. The information to be provided on this exhibit shall include, but not be limited to:

- 8 ½”x11” exhibits with record property owner information.
- Types of BMPs (i.e., site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.
- Clear depicting of location of BMPs, especially those located below ground.
- A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.
- Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.
- Understanding the documentation of proper maintenance must be presented to the City upon request.

Secs. 74-334 – 74.340. Reserved.

DIVISION 5. ENFORCEMENT

Sec. 74-341. Violations.

Any person violating any provisions of this Article shall be responsible for a municipal civil infraction and subject to the City’s progressive enforcement policy as detailed in the City Code.

Sec. 74-342. Stop Work Order.

Where there is work in progress that causes or contributes in whole or in part, a violation of any provision of this Article, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Article or to avoid or reduce the effects of non-compliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

Sec. 74-343. Failure to Comply.

In addition to any other remedies, should any owner fail to comply with the provisions of this Article, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

Sec. 74-344. Emergency Measures.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health, and welfare, and/or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Article, and shall promptly reimburse the City for all such costs.

Sec.74-345. Cost Recovery for Damage to Storm Drain System.

A discharger shall be liable for all costs incurred by the City as a result of causing a discharge that produces a deposit or obstruction, or causes damage to or impairs a storm drain, or water quality violation, or violates any of the provisions of this Article. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles and Santa Ana Regional Water Quality Control Boards for violation of an NPDES Permit, attorney fees, and other costs and expenses.

Secs. 74-346 – 74-360. Reserved.

SECTION 2. Any provision of the Pomona City Code that is inconsistent with the provisions of this Ordinance, to the extent of such inconsistencies and no further, are modified to the extent necessary to affect the provisions of this Ordinance.

SECTION 3. If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council of the City of Pomona hereby declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase or portion thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases, or portions be declared invalid or unconstitutional.

SECTION 4. The City Clerk shall certify to the passage and adoption of this ordinance, causing it to be posted as required by law, and it shall be effective thirty (30) days after its adoption.

APPROVED, PASSED AND ADOPTED this 2nd day of June, 2014.

ATTEST: CITY OF POMONA

________________________ ________________________

Eva M. Buice, City Clerk Elliott Rothman, Mayor

APPROVED AS TO FORM:

____
Arnold M. Alvarez-Glasman, City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)
CITY OF POMONA)

I, Eva M. Buice, CITY CLERK of the City of Pomona do hereby certify that the foregoing Ordinance was introduced for first reading on _______, 2014 and adopted at second reading at a regular meeting of the City Council of the City of Pomona held on the ___ of ______, 2014 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:
ABSTAIN: COUNCILMEMBERS:

____
Eva M. Buice, MMC City Clerk

14. The City Council introduced, at first reading, **Ordinance No. 4185** of the City of Pomona, California, approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID) Ordinance and adoption of Resolution establishing a Green Street Policy **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL, OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS

DISCUSSION CALENDAR

15. The City Council approved findings of Public Benefit to the Community at Large for the following expenditures: **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY MAYOR ROTHMAN, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

A) $2900 to the City of Pomona Community Services Department for rental of the City stage and other costs associated with the annual Relay for Life Event

B) $100 to Garey High School in support of the ROTC Program

C) $200 to the Pomona Police Department in support of the G.R.E.A.T. Program

D) $125 to the Pomona Concert Band in support of program expenses

E) $75 to the Salvation Army in support of the Release Time Education Program

F) Amount to be determined to Saint Madeleine's Church for expenses associated with their Annual Fiesta

G) Amount to be determined to the Pomona Police Department in support of the Annual Campout

H) Amount to be determined for the Holiday Toy Drive

I) Amount to be determined to Pomona Heritage in support of the Home Restoration Workshop

J) Amount to be determined to The Kiwanis Club of Pomona in support of June 8th Car Show event

K) Amount to be determined to the Pomona Youth Orchestra for sound equipment and miscellaneous program expenses

16. The City Council discussed a proposed moratorium and considered creating a Task Force for review of Waste and Recycling facilities Correspondence from Clean & Green Pomona, and Inland Communities Organizing Network was received on May 19th and a copy was provided to each of you on the dais. **MOTION BY COUNCILMEMBER LANTZ, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT) that the item be returned for discussion and directed Staff with recommendations: 2) Prepare an Urgency Ordinance declaring a moratorium on new or the expansion of existing waste and recycling facilities for City Council consideration at an upcoming City Council meeting. 3) Establish a task force to examine the public health, safety, and cost of service issues at waste-related and recycling facilities and provide direction on how to staff the task force; the City Council also noted that other businesses will not be considered and that the two existing businesses will be considered until the moratorium is lifted.**

RESOLUTION NO. 2014-57

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

RESOLUTION NO. 2014-58

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM EXCLUSIVELY FOR MANUFACTURED HOUSING; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

5. The City Council adopted, at second reading, Ordinance No. 4185 approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID). **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

6. The City Council approved an agreement extension with InfoSend, Inc. for a period of up to nine (9) months, in an amount not to exceed $26,000 plus actual postage costs for the printing, posting, mailing, and Electronic Bill Presentment and Payment (EBPP) services for City utility bills. **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

DISCUSSION CALENDAR

7. The City Council made a Finding of Public Benefit to the Community at Large for the following expenditures **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY VICE MAYOR NOLTE, CARRIED 7-0**:

   A) Amount to be determined to the Learning Centers at the Fairplex in support of the Fair Kids Yellow Bus Program

   B) Amount to be determined to the Pomona Economic Opportunity Center (PEOC) in support of the "Support the Struggle" fundraiser

   C) Amount to be determined to the Pomona Unified Partners in Education (PUPIL) Foundation in support of the Scholarship luncheon

   D) Amount to be determined to Junior Foundation Charities for their fundraiser event

Green Streets Policy

Purpose

The City of San Dimas (City) shall implement green street Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of San Dimas shall require that new public and private street and road construction of 10,000 square feet or more of impervious surface area and street and road redevelopment that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site consider green street strategies. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of San Dimas shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Best Management Practices (BMPs). The City of San Dimas shall require projects subject to this policy, to include, but not limited to appropriate BMPs as listed below to the maximum extent practicable:

- Planter/tree boxes
- Tree canopy rain interception
- Implementation of alternative street widths
- Infiltration
- Permeable pavement
- Bioswales
- Vegetated curb extensions
- Recycled Asphalt

Additional BMPs are available in the Los Angeles County Low Impact Development (LID) Standards Manual.

D. Retrofit Scope. The City of San Dimas shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of San Dimas shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 1231

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SAN DIMAS APPROVING LOW IMPACT DEVELOPMENT REQUIREMENTS IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

THE CITY COUNCIL OF THE CITY OF SAN DIMAS DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 14 of the San Dimas Waters and Sewers Code are hereby amended as set forth in attached Exhibit A.

SECTION 2. This Ordinance shall take effect 30 days after its final passage, and within 15 days after its passage the City Clerk shall cause it to be published in the Inland Valley Daily Bulletin, a newspaper of general circulation in the City of San Dimas hereby designated for that purpose.

PASSED, APPROVED AND ADOPTED THIS 24th DAY OF JUNE, 2014.

Curtis W. Morris

Curtis W. Morris, Mayor of the City of San Dimas

ATTEST:

Ken Duran

Ken Duran, City Clerk

I, Ken Duran, City Clerk of the City of San Dimas, do hereby certify that **Ordinance No. 1231** was regularly introduced at the regular meeting of the City Council on June 10th, 2014 and was thereafter adopted and passed at the regular meeting of the City Council held on June 24th, 2014 by the following vote:

AYES:	Badar, Bertone, Templeman, Morris
NOES:	None
ABSENT:	Ebiner
ABSTAIN:	None

I, Ken Duran, City Clerk further certify that within 15 days of the date of its passage, I caused a copy of Ordinance No. 1231 to be published in the Inland Valley Daily Bulletin.

Ken Duran

Ken Duran, City Clerk

EXHIBIT A

Chapter 14.13 Low Impact Development Ordinance No. 1231

Sections:

14.13.010 Title

This Chapter shall be known as the "City of San Dimas Low Impact Development (LID) Ordinance" and may be so cited.

14.13.020 Purpose

It is the purpose of this Chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts from stormwater runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking

lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs), (including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs.

F. Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

1. On-site infiltration, bioretention and/or rainfall harvest and use.

2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

14.13.030 Findings

The City of San Dimas (hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this Chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

14.13.040 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this Chapter are complex in nature. Effort has been made to simplify terms to the extent the subject matter permits.

14.13.050 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City of San Dimas to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City of San Dimas Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharging directly to a Significant Ecological Area (SEA), such as: San Dimas Canyon / San Antonio Wash where the development will:

a. Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

11. Single-family hillside homes. During the construction of a single family hillside home, the following measures shall be considered to the maximum extent practicable:

a. Conserve natural areas.

b. Protect slopes and channels.

c. Provide storm drain system stenciling and signage.

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

e. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been not subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

14.13.060 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 14.13.050 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume ($SWQD_v$) on-site through:

1. Minimizing the impervious surface area; and

2. Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

14.13.070 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the $SWQD_v$ on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the $SWQD_v$ that is not reliably retained on-site, as calculated by Equation 1 below:

Equation 1:
$B_v = 1.5 * [SWQD_v - R_v]$

Where:

B_v = biofiltration volume

$SWQD_v$ = the stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater.

R_v = volume reliably retained on-site

B. Offsite Infiltration – Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the $SWQD_v$, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:
$M_v = 1.0 * [SWQD_v - R_v]$

Where:

M_v = mitigation volume

$SWQD_v$ = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

R_v = the volume of storm water runoff reliably retained on-site.

C. Offsite Project - Retrofit Existing Development – Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

14.13.080 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If Staff determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, Staff shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

4. If the plan is approved, the City will require the following:

a. The applicant shall provide copies of all necessary state, federal, or local permits relating to stormwater management to the City.

b. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with

the Los Angeles County Recorder prior to issuance of occupancy.

c. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either:

i. A signed statement from the public entity assuming responsibility for BMP maintenance; or

ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or

iii. Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association; or

d. The applicant shall post cash or a letter of credit in an amount not less than 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

e. This deposit shall be returned to the applicant (in the case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

f. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm drains and stormwater BMPs shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of San Dimas including the costs of on-site inspections, as set forth by resolution of the City Council.

14.13.100 Maintenance Agreement

A. Purpose of Maintenance Agreement

The purpose of the maintenance agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

B. Maintenance Agreement Required

1. A maintenance agreement shall be submitted to the City, for review by the City Engineer and his/her designee and, if necessary, City Attorney. The Designers may

select any combination of stormwater BMPs which meet the performance standards provided this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal maintenance plan shall be included in the maintenance agreement.

C. Maintenance Agreement Provisions

1. The maintenance agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPs, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance shall be provided by the party responsible for maintenance to the City of San Dimas at least 14 days in advance of commencing work.

2. The maintenance agreement shall be binding on all subsequent owners of land served by the stormwater BMPs.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved maintenance agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 8.16 of the San Dimas Municipal Code.

4. A fully executed "Maintenance Covenant for permanent BMP's Requirements" shall be recorded with the L.A. County Registrar/Recorder and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include an exhibit that details the installed treatment control devices as well as any site design or source control Best Management Practices (BMPs) for post construction. The information to be provided on this exhibit shall include, but not be limited to:

a. 8 ½" x 11" exhibits with record property owner information.

b. Types of BMPs (i.e., site design, source control and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.

c. Clear depiction of location of BMPs, especially those located below ground.

d. A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.

e. Agreement to retain documentation of proper maintenance for a period of two (2) years.

f. Understanding that documentation of proper maintenance must be presented to the City upon request.

14.13.110 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provisions of Chapter 1 and/or Chapter 8.16 of the San Dimas Municipal Code.

14.13.120 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

14.13.130 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/ or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all of such costs.

14.13.150 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this Chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

Appendix D

Applicable Water Quality Objectives

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
1,1,1-Trichloroethane	µg/L		200				
1,1,2,2-Tetrachloroethane	µg/L		1	11	11	0.17	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L		1200				
1,1,2-Trichloroethane	µg/L		5	42	42	0.6	
1,1-Dichloroethane	µg/L		5				
1,1-Dichloroethylene	µg/L		6	3.2	3.2	0.057	
1,2,4-Trichlorobenzene	µg/L		70				
1,2-Dibromo-3-Chloropropane	µg/L		0.2				
1,2-Dichlorobenzene	µg/L		600	17000	17000	2700	
1,2-Dichloroethane	µg/L		0.5	99	99	0.38	
1,2-Dichloropropane	µg/L		5	39	39	0.52	
1,2-Diphenylhydrazine	µg/L			0.54	0.54	0.04	
1,2-Trans-Dichloroethylene	µg/L		10	140000	140000	700	
1,3-Dichlorobenzene	µg/L			2600	2600	400	
1,3-Dichloropropylene	µg/L		0.5	1700	1700	10	
1,4-Dichlorobenzene	µg/L		5	2600	2600	400	
2,3,7,8-TCDD (Dioxin)	pg/L		30	0.014	0.014	0.013	
2,4,5-TP	µg/L		50				
2,4,6-Trichlorophenol	µg/L			6.5	6.5	2.1	
2,4-D	µg/L		70				
2,4-Dichlorophenol	µg/L			790	790	93	
2,4-Dimethylphenol	µg/L			2300	2300	540	
2,4-Dinitrophenol	µg/L			14000	14000	70	
2,4-Dinitrotoluene	µg/L			9.1	9.1	0.11	
2-Chloronaphthalene	µg/L			4300	4300	1700	
2-Chlorophenol	µg/L			400	400	120	
2-Methyl-4,6-Dinitrophenol	µg/L			765	765	13.4	
3,3'-Dichlorobenzidine	µg/L			0.077	0.077	0.04	
4,4'-DDD	µg/L			0.00084	0.00084	0.00083	
4,4'-DDE	µg/L			0.00059	0.00059	0.00059	
4,4'-DDT	µg/L			0.00059	0.00059	0.00059	0.001 G, ii
Acenaphthene	µg/L			2700	2700	1200	
Acrolein	µg/L			780	780	320	3ug/L
Acrylonitrile	µg/L			0.66	0.66	0.059	
Alachlor	µg/L		2				
Aldrin	µg/L			0.00014	0.00014	0.00013	0
alpha-BHC	µg/L			0.013	0.013	0.0039	
alpha-Endosulfan	µg/L			0.056	0.0087	0.056	0.056 G, Y
Aluminum	µg/L		1000				
Ammonia (Total) as N	mg/L	0.035	0.035				
Ammonia as N	mg/L	2.23	2.23				
Anthracene	µg/L			110000	110000	9600	
Antimony	µg/L		6	4300	4300	14	
Aroclors	µg/L	0.00007	0.00007	0.00017	0.00017	0.00017	
Arsenic	µg/L		50	150	36	150	150 A, D
Asbestos	MFL		7	0	0	7	
Atrazine	µg/L		3				
Barium	µg/L		1000				
Bentazon	µg/L		18				
Benzene	µg/L		1	71	71	1.2	
Benzidine	µg/L			0.00054	0.00054	0.00012	
Benzo(a)Anthracene	µg/L			0.049	0.049	0.0044	
Benzo(a)Pyrene	µg/L		0.2	0.049	0.049	0.0044	
Benzo(b)Fluoranthene	µg/L			0.049	0.049	0.0044	
Benzo(k)Fluoranthene	µg/L			0.049	0.049	0.0044	
Beryllium	µg/L		4	0	0	0	
beta-BHC	µg/L			0.046	0.046	0.014	
beta-Endosulfan	µg/L			0.056	0.0087	0.056	0.056 G, Y
Bioaccumulation							
Biostimulatory Substances							
Bis(2-chloroethyl)Ether	µg/L			1.4	1.4	0.031	
Bis(2-chloroisopropyl)Ether	µg/L			170000	170000	1400	
Bis(2-ethylhexyl)Adipate	µg/L		400				
Bis(2-ethylhexyl)Phthalate	µg/L		4	5.9	5.9	1.8	
BOD	mg/L						
Boron	mg/L						0
Bromoform	µg/L			360	360	4.3	
Butylbenzyl Phthalate	µg/L			5200	5200	3000	
Cadmium	µg/L		5	2.2	9.3	2.2	0.25 D, E
Carbofuran	µg/L		18				
Carbon Tetrachloride	µg/L		0.5	4.4	4.4	0.25	

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
Chemical Constituents							
Chlordanes	µg/L		0.1	0.00059	0.00059	0.00057	
Chloride	mg/L						230000
Chlorine (Total Residual)	µg/L		100				
Chlorobenzene	µg/L		70	21000	21000	680	
Chlorodibromomethane	µg/L			34	34	0.41	
Chromium	µg/L		50				
Chromium (III)	µg/L			180		180	74 D, E
Chromium (VI)	µg/L			11	50	11	11 D
Chrysene	µg/L			0.049	0.049	0.0044	
cis-1,2-Dichloroethylene	µg/L		6				
Color							0
Copper	µg/L			9	3.1	9	4.8 D, cc
Cyanide	µg/L		200	5.2	1	5.2	5.2 Q
Dalapon	µg/L		200				
Dibenzo(a,h)Anthracene	µg/L			0.049	0.049	0.0044	
Dichlorobromomethane	µg/L			46	46	0.56	
Dieldrin	µg/L			0.00014	0.00014	0.00014	0.056 O
Diethyl Phthalate	µg/L			120000	120000	23000	
Dimethyl Phthalate	µg/L			2900000	2900000	313000	
Di-n-Butyl Phthalate	µg/L			12000	12000	2700	
Dinoseb	µg/L		7				
Diquat	µg/L		20				
Dissolved Oxygen	mg/L	5	5				
E. Coli	MPN/100mL	126	126				
Endosulfan Sulfate	µg/L			240	240	110	
Endothall	µg/L		100				
Endrin	µg/L		2	0.036	0.0023	0.036	0.036 O
Endrin Aldehyde	µg/L			0.81	0.81	0.76	
Enterococcus	MPN/100mL	35	35				
Ethylbenzene	µg/L		700	29000	29000	3100	
Ethylene Dibromide	µg/L		0.05				
Exotic Vegetation							
Fecal Coliform	MPN/100mL	200	200				
Floating Material							
Fluoranthene	µg/L			370	370	300	
Fluorene	µg/L			14000	14000	1300	
Fluoride	mg/L		2				
gamma-BHC (Lindane)	µg/L		0.2	0.063	0.063	0.019	0
Glyphosate	µg/L		700				
Gross Alpha particle activity	pCi/L		15				
Gross Beta particle activity	pCi/L		50				
Habitat							
Heptachlor	µg/L		0.01	0.00021	0.00021	0.00021	0.0038 G
Heptachlor Epoxide	µg/L		0.01	0.00011	0.00011	0.0001	0.0038 G, V
Hexachlorobenzene	µg/L		1	0.00077	0.00077	0.00075	
Hexachlorobutadiene	µg/L			50	50	0.44	
Hexachlorocyclopentadiene	µg/L		50	17000	17000	240	
Hexachloroethane	µg/L			8.9	8.9	1.9	
Hydrology							
Indeno(1,2,3-cd)Pyrene	µg/L			0.049	0.049	0.0044	
Isophorone	µg/L			600	600	8.4	
Lead	µg/L			2.5	8.1	2.5	2.5 D, E
MBAS	µg/L		500				
Mercury	µg/L		2	0.051	0.051	0.05	0.77 D, hh
Methoxychlor	µg/L		40				0.03 C
Methyl Bromide	µg/L			4000	4000	48	
Methylene Chloride	µg/L		5	1600	1600	4.7	
Molinate	µg/L		20				
Nickel	µg/L		100	52	8.2	52	52 D, E
Nitrate as N	mg/L		10				
Nitrate as NO3	mg/L		45				
Nitrite as N	mg/L		1				
Nitrobenzene	µg/L			1900	1900	17	
Nitrogen (NO3-N+NO2-N)	mg/L		10				
N-Nitrosodimethylamine	µg/L			8.1	8.1	0.00069	
N-Nitrosodi-n-Propylamine	µg/L			1.4	1.4	0.005	
N-Nitrosodiphenylamine	µg/L			16	16	5	
Oil + Grease	mg/L						
Oxamyl	µg/L		200				

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
PCBs	µg/L			0.00017	0.00017	0.00017	
Pentachlorophenol	µg/L		1	8.2	7.9	0.28	15 F
pH	pH Units	6.5	6.5				6.5 – 9 C
Phenol	µg/L			4600000	4600000	21000	
Picloram	µg/L		500				
Pyrene	µg/L			11000	11000	960	
Radioactive Substances	pCi/L						
Radium-226 + Radium-228	pCi/L		5				
Ratio Fecal/Total Coliform							
Selenium	µg/L		50	5	71	5	5.0 R
Silver	µg/L			3.4	1.9	3.4	0
Simazine	µg/L		4				
Strontium-90	pCi/L		8				
Styrene	µg/L		100				
Sulfate	mg/L						
Taste and Odor							
TDS	mg/L						
Temperature	°C	26.7	26.7				0
Tetrachloroethylene	µg/L		5	8.85	8.85	0.8	
Thallium	µg/L		2	6.3	6.3	1.7	
Thiobencarb	µg/L		70				
Toluene	µg/L		150	200000	200000	6800	
Total Coliform	MPN/100mL	70	70				
Total Settleable Solids							
Toxaphene	µg/L		3	0.0002	0.0002	0.0002	0.0002
Toxicity							
Trichloroethylene	µg/L		5	81	81	2.7	
Trichlorofluoromethane	µg/L		150				
Tritium	pCi/L		20000				
TSS	mg/L						
Turbidity	NTU						
Uranium	pCi/L		20				
Vinyl Chloride	µg/L		0.5	525	525	2	
Xylenes (Total)	µg/L		1750				
Zinc	µg/L			120	81	120	120 D, E

Table 1 - Comments to ESGV Draft WMP

Comment	Permit Page # /Section	Regional Board Comment and Necessary Revision	Response Comments/Notes
1	Pg. 59 - Part VI.C.5.a.ii. Waterbody-Pollutant Classification	Greater detail on the water quality characterization, including (1) a map of the locations of the monitoring sites for each of the four sources of data identified on page 7 relative to the watershed management area, and (2) a tabular summary of the data should be provided.	Additional detail has been added to augment the WMP document. Figure 3-1 has been added to show monitoring site locations. Table 3-1 has been added to summarize the data collected during development of the WQPs.
2	Pg. 59 - Part VI.C.5.a.ii. Waterbody-Pollutant Classification	In Section 5.1.4, the data used to establish existing concentrations should be described in more detail and presented in tabular form. Additionally, Table 5-2 appears to omit from the analysis San Jose Creek. Discharges to San Jose Creek are subject to a dry-weather water quality-based effluent limitation (WQBEL) for selenium; therefore, data on existing concentration should be included for San Jose Creek.	Selenium is a natural source. The discharge of the MS4 should be low Se (other than groundwater infiltration to the MS4) monitoring will confirm. Table 5-4 has been added to provide clarification. The section of "San Jose Creek" through the WMP area is called "Thompson Creek"
3	Pg. 59 - Part VI.C.5.a.ii. Waterbody-Pollutant Classification	The MS4 permit requires WMPs to include the applicable WQBELs for every approved TMDL within the WMA. The draft WMP does not include the WQBELs for Puddingstone Reservoir for total phosphorus and total nitrogen, total mercury, and PCBs, chlordane, dieldrin, total DDT and 4,4-DDT.	Table 5-5 and Appendix D have been added to provide clarification.
4	Pg. 59 - Part VI.C.5.a.ii. Waterbody-Pollutant Classification	The WMP needs to address all applicable WQBELs to comply with provisions of Part VI.E and Attachment P related to the Los Angeles Lakes TMDLs (specifically, Puddingstone Reservoir for nitrogen, phosphorus, mercury, PCBs, chlordane, dieldrin and DDT compounds). Attachment P identifies wasteload allocations for each of the four municipalities in the ESGV WMG and states these are to be measured at the point of discharge into the receiving waters. Also, if implementation will take more than one year, then interim milestones and dates for their achievement must also be included.	The WMP is based on retention of the 85th percentile, 24-hour storm by 2026. Achievement of this implementation goal will address <u>all</u> Water Quality Priorities in the WMP area. See Section 5.3. Milestones are provided in Section 5.3, see Table 5-15, Table 5-16, and Figure 5-23. New clarifying language on the benefits of the design storm approach was added to the opening of Section 5 on page 30, as follows: "By using design storm retention as the basis for the RAA, it comprehensively addresses all Water Quality Priorities, as follows: • Retention of the design storm addresses all Category 1, 2 and 3 pollutants • Retention of the design storm addresses any additional pollutants that may arise as Water Quality Priorities during EWMP implementation • Retention of the design storm addresses both wet and dry weather issues • The schedule for implementing BMPs to retain the design storm (Section 5.3) is the schedule for addressing all current and future Water Quality Priorities, including Puddingstone Reservoir."
5	Pg. 59 - Part VI.C.5.a.ii. Waterbody-Pollutant Classification	The WMP needs to specify the applicable receiving water limitations for Category 3 waterbody-pollutant combinations (WBPCs).	A Table of Applicable WQOs has been added as Appendix D.
6	Pg. 60 - Part VI.C.5.a.iv.	The WMP needs to provide a clear schedule that demonstrates implementation of the BMPs will achieve the required interim metal reductions by the compliance deadlines. Whereas Tables 5-6 through 5-9 present the type of structural BMPs to be implemented by each City, there are no specific dates for installation; the WMP schedule should describe timelines through 2022.	A clear schedule for retaining the design storm volume is presented in Table 5-15, Table 5-16, and Figure 5-23. The % capacity matches the SGR Metals TMDL milestones. Because the RAA is based on the design storm, the schedule for interim pacing shown in Table 5-16 is the schedule for addressing all Water Quality Priorities in the WMP area. Many pollutants will likely be addressed well before full implementation of the design storm BMPs.
7	Pg. 61-64 - Part VI.C.5.b. Selection of Watershed Control Measures	The WMP proposes to increase frequency of construction site inspections although this appears to apply only for City of San Dimas. The WMP should either increase such frequency for other Cities or provide rationale for no changes for the other cities of the ESGV WMG. The WMP also proposes to require inventory of existing developments for future BMP retrofits; however no timeframe is included.	Clarifying language has been added. The frequency of construction site inspections is not increasing; rather it would be aligned with frequency of San Dimas' building permit inspections.
8	Pg. 61-64 - Part VI.C.5.b. Selection of Watershed Control Measures	The draft RAA addresses WBPCs for the San Gabriel Metals TMDLs; however the RAA does not address activities and control measures to address selenium in San Jose Creek Reach 2, nor pollutants in the Puddingstone Reservoir TMDLs. Greater clarity should be provided on the volume based approach taken by the ESGV WMG.	The WMP is based on retention of the 85th percentile, 24-hour storm by 2026. Achievement of this implementation goal will address <u>all</u> Water Quality Priorities. See Section 5.3. New clarifying language was added to the opening of Section 5 on page 30.
9	Pg. 61-64 - Part VI.C.5.b. Selection of Watershed Control Measures	Activities and control measures for Category 3 WBPCs for Walnut Creek Wash and San Gabriel River Reach 2 and Reach 3 are not included. To the extent that the group intends to address these through the volume based approach, this should be more clearly stated in the WMP.	The WMP is based on retention of the 85th percentile, 24-hour storm by 2026. Achievement of this implementation goal will address <u>all</u> Water Quality Priorities. See Section 5.3. New clarifying language was added to the opening of Section 5 on page 30.

Comment	Permit Page # /Section	Regional Board Comment and Necessary Revision	Response Comments/Notes
10	Pg. 61-64 - Part VI.C.5.b. Selection of Watershed Control Measures	The RAA identifies potential areas for green street conversion and assumes a 30% conversion of the road length in the suitable areas; however, the specific locations and projects are not identified. Although it may not be possible to provide detailed information on specific projects at this time, the WMP should at least specify the number of projects needed to ensure timely compliance with permit requirements.	The locations for implementing green streets are presented in great detail in the WMP. Each subwatershed is prescribed a unique recipe for green streets implementation (as detailed in Table 5-11 to 5-14). See Figure 5-21. In other words, the green street capacities to be implemented by WMP are detailed with a spatial resolution that matches the WMMS subwatersheds, approximately 1 to 2 square miles.
11	Pg. 61-64 - Part VI.C.5.b. Selection of Watershed Control Measures	The draft WMP assumes a 10% pollutant reduction from new non-structural controls. Although 10% is a modest fraction of the overall controls necessary, additional support for this assumption should be provided, or as part of the adaptive management process, the Permittees could commit to evaluate this assumption during program implementation and develop alternate controls if it becomes apparent that the assumption is not warranted.	The Group committed to specific BMPs associated with the 10% reduction, including a Rainfall Runoff Reduction program (see Section 5.4) As stated in the revised WMP, "All of these control measures represent *enhanced BMP implementation* from the baseline condition that existed prior to the 2012 Permit." Table 5-17 details the institutional controls and discusses their status prior to the 2012 Permit. Language was also added to clarify the approach if the 10% milestone is not attained as expected "During adaptive management, if the 10% milestone is not attained in 2017, then the Group will develop alternate institutional controls or additional structural controls as necessary."
12	Pg. 63-64 - Part VI.C.5.b.iv.(5) Reasonable Assurance Analysis	The draft WMP, including the RAA, excludes stormwater runoff from "non-MS4" facilities within the WMA from the stormwater treatment target. In particular, industrial facilities that are permitted by the Water Boards under the Industrial General Permit or an individual stormwater permit were identified and subtracted from the treatment target. Regional Water Board staff recognizes that this was done with the assumption that these industrial facilities will retain their runoff and/or eliminate their cause/contribution to receiving water exceedances, as required by their respective NPDES permit. However, it is important that the Group's actions under its Industrial/Commercial Facilities Program-including tracking critical industrial sources, educating industrial facilities regarding BMP requirements, and inspecting industrial facilities- ensure that all industrial facilities are implementing BMPs as required.	Noted. The following language was added to Section 5.2.2 page 58: "Note: the Group will continue to inspect industrial facilities under the Permit inspection programs."
13	Pg. 63-64 - Part VI.C.5.b.iv.(5) Reasonable Assurance Analysis	The draft WMP, including the RAA, takes a similar approach for areas under the jurisdiction of the California Department of Transportation (Caltrans). Caltrans facilities that are permitted under the Caltrans MS4 permit (Order No. 2012-0011-DWQ) were also identified and subtracted from the treatment target. It should be noted that the Amendment to the Caltrans Permit (Order WQ 2014-0077-DWQ) includes provisions to address TMDL requirements throughout the state. Revisions to Attachment IV of the Caltrans Permit require that Caltrans prioritize all TMDLs for implementation of source control measures and BMPs, with prioritization being "consistent with the final TMDL deadlines to the extent feasible." Additionally, the Caltrans Permit also includes provisions for collaborative implementation through Cooperative Implementation Agreements between Caltrans and other responsible entities to conduct work to comply with a TMDL. By contributing funds to Cooperative Implementation Agreements and/or the Cooperative Implementation Grant Program, Caltrans may receive credit for compliance units, which are needed for compliance under the Caltrans Permit. In a similar manner, the LA County MS4 Permit includes provisions for Permittees to control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other MS4 owners-such as Caltrans-to successfully implement the provisions of the Order (see Parts VI.A.2.a .viii and VI.A.4.a.iii). Therefore, the Group should ensure that it is closely coordinating with appropriate Caltrans District staff regarding the identification and implementation of watershed control measures to achieve water quality requirements (i.e. applicable Receiving Water Limitations and WQBELs).	The Group has reached out to Caltrans (Robert Wu) to coordinate on BMPs that Caltrans has/will be installing on Caltrans property through the Group's jurisdiction. The following language was added to Section 5.2.2 page 58: "In addition, the Group will work with Caltrans on potential options for collaborating during WMP implementation."
14		The required reductions for dry weather were calculated based on the median and the 90th percentile existing concentrations in Section 5.1.4 of the WMP. Specific required reductions for Thompson Creek, San Dimas, and Puddingstone Reservoir were listed in Table 5-2 on page 42 of the draft WMP. However, the required reductions for dry weather for San Jose reek were not included in the table. The WMP should be revised to include the required reductions for identified priority pollutants for San Jose Creek.	San Jose Creek and Thompson Creek are the same watershed/waterbody for purposes of the WMP. The Thompson Creek watershed refers also to San Jose Creek.
15		The predicted runoff volumes presented in Figure 5-12 and Table 5-1 should be presented and explained in more detail to provide clarity on how those values were obtained from the hourly model output results of runoff volume over the 24-hour design event for each subwatershed or city-subwatershed.	The modeling files provided the Group show the 24-hour simulation used to estimate design storm volumes. See Section 5.1.4 for details on the hydrologic simulation. The assumed design storm characteristics (shape, duration, etc.) match the County hydrology manual.
16		The report did not describe how the model was calibrated, including calibration results compared to calibration criteria in Table 3.0 of the RAA Guidelines, and no historical hydrology data were used for comparison with the model results for the baseline prediction. According to Part G, pages 12-13 of the RAA Guidelines, model calibration is necessary to ensure that the model can properly assess all the variables and conditions in a watershed system. The hydrology calibration is particularly important in the case of the East San Gabriel Valley RAA, since the group is used a volume-based approach.	A new section 5.1.2 is added to report the hydrology calibration.
17		The report presents the existing runoff volumes and required volume reductions to achieve the 85th percentile, 24-hour volume retention standard for each watershed area. The report needs to present the same information, if available, for non-stormwater runoff. Alternatively, the report should include a commitment to collect the necessary data in each watershed area, through the non-stormwater outfall screening and monitoring program, so that the model can be re-calibrated during the adaptive management process to better characterize non-stormwater flow volumes and to demonstrate that proposed volume retention BMPs will capture 100 percent of nonstormwater that would	Non-stormwater runoff will be controlled by stormwater BMPs. By 2023, the dry weather compliance date for the SGR metals TMDL, 65% of the design storm runoff will be captured in each subwatershed within the WMP area. That BMP capacity will easily address non-stormwater flows. See the paragraph at the bottom of page 66.

Comment	Permit Page # /Section	Regional Board Comment and Necessary Revision	Response Comments/Notes
		otherwise be discharged through the MS4 in each watershed area.	
18		The index of subwatersheds shown in Figure 5-15 does not match that used in the model input file. The ID numbers for 67 subwatersheds from the model input file (and the correspondence of these 67 subwatersheds to the 98 city-subwatersheds) must be provided and be shown in the simulation domain to present the geographic relationship of these subwatersheds and city-subwatersheds that are simulated in the LSPC model.	To explain the subwatershed index, the following footnote was added to the end of Section 5.2, as follows: "The 67 LSPC subwatersheds within the WMP boundary were overlaid with the jurisdictional boundaries to create 98 city-subwatersheds. The city-subwatershed ID is composed of the jurisdictional identifier (the first two digits) and the original LSPC subwatershed ID (the last four digits). To identify the geographical relationship between the LSPC model subwatersheds and the city-subwatersheds shown in Figure 5-20, the last four digits of the city-subwatershed correspond to the LSPC Subwatershed IDs."
19		In the analysis of the required reduction for lead, zinc, selenium and E. coli under the dry weather condition, more detailed information about the baseline condition for 50th and 90th percentile existing concentration presented in Table 5-2 should be provided.	The design storm approach of the RAA comprehensively addresses all Water Quality Priorities during both dry and wet weather. By 2023, the dry weather compliance date for the SGR metals TMDL, 65% of the design storm runoff will be captured in each subwatershed within the WMP area. That BMP capacity will easily address non-stormwater flows. See the paragraph at the bottom of page 66.

February 2015

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Coordinated Integrated Monitoring Program (CIMP)

Prepared by

East San Gabriel Valley Watershed Management Group

(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

RB-AR3975

Executive Summary

The East San Gabriel Valley Watershed Management Group (ESGV Group) is comprised of the Cities of Claremont, La Verne, Pomona, and San Dimas (Group Members). Group Members started meeting in early 2013 to collaboratively develop a Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) for the East San Gabriel Valley Watershed.

The WMP and CIMP fulfill requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175 (Permit). The Permit was adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) November 8, 2012, and became effective December 28, 2012. The CIMP is the Group Members approach to meeting the Monitoring and Reporting Program (MRP) requirements of the Permit.

The CIMP is designed to provide the information necessary to guide management decisions in addition to providing a means to measure compliance with the Permit. The CIMP is composed of five elements:

1. Receiving Water Monitoring
2. Stormwater Outfall Monitoring
3. Non-Stormwater Outfall Assessment and Monitoring
4. New Development/Redevelopment Effectiveness Tracking
5. Regional Studies

Semi-annual analytical data reports and annual monitoring reports will be submitted as outlined in the MRP. The annual monitoring reports will cover the monitoring period of July 1 through June 30.

The WMP, containing customized strategies, control measures, and best management practices (BMPs) for the ESGV Group will be presented in a separate document according to the Permit schedule.

RECEIVING WATER MONITORING

Receiving water monitoring is designed to assess whether water quality objectives are being met in water bodies and if beneficial uses are being supported. The Group Members propose two types of receiving water monitoring:

- **Long-Term Assessment** – Long-Term Assessment (LTA) monitoring is intended to determine if receiving water limitations (RWLs) are achieved, assess trends in pollutant

concentrations over time, and to determine whether designated uses are supported. LTA sites include:

- Live Oak Wash at the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash.

- **TMDL** – TMDL monitoring is conducted to evaluate attainment of or progress in attaining the WLAs. TMDL sites include:
  - San Jose Creek Reach 1 at the downstream intersection with the WMP Boundary.
  - San Dimas Wash at the intersection with the WMP Boundary.
  - Walnut Creek Wash at the intersection with the WMP Boundary (optional site, triggered by ESGV Group if determining WMP area contribution is necessary.)

In addition, the Group Members will be coordinating receiving water monitoring with other watershed management program groups in the San Gabriel River Watershed and the Los Angeles County Sanitation Districts to share monitoring data in the San Gabriel River Watershed Management Area. The Group Members may use the data in evaluating its progress in meeting the goals and requirements of the Permit.

STORMWATER OUTFALL MONITORING

Stormwater outfall monitoring is intended for determining if a Group Member's MS4 system is causing or contributing to water quality issues observed in the receiving water. The Group Members proposes three stormwater outfall monitoring sites, one for each subwatersheds defined by the hydrologic unit code-12 (HUC-12s) for the ESGV Group. The monitoring sites were selected to be representative of the land uses for each HUC-12. Monitoring will be conducted during three events at each stormwater outfall monitoring site for the monitoring requirements of the waterbody to which they discharge, as well as downstream water bodies. Monitoring at these outfall sites will be used to assess compliance with water quality based effluent limitations (WQBELs), TMDL WLAs, and whether the MS4 may be causing or contributing to observed exceedances of RWLs. Monitoring of Puddingstone Reservoir will be conducted by the County of Los Angeles (County) under a separate program.

NON-STORMWATER OUTFALL SCREENING AND MONITORING

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges from major outfalls to receiving waters. The program serves to provide an assessment on whether non-stormwater discharges are potentially impacting the receiving water and whether significant non-stormwater discharges are allowable. The screening process will begin summer 2014. Visual observations gathered from the screening events, such as size, estimated flow, flow characteristics, and receiving water conditions, will be used to determine and prioritize

significant non-stormwater discharges. In the order of prioritization, sources will be investigated, and monitoring sites will be determined. Monitored parameters will depend upon the receiving water on which the non-stormwater outfall site it is located.

NEW DEVELOPMENT/RE-DEVELOPMENT EFFECTIVENESS TRACKING

Group Members maintain databases tracking information related to new and redevelopment projects subject to the minimum control measures (MCMs). The collected information will be used to assess the effectiveness of the low impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction. The CIMP provides general details on the requirements and approaches related to the new and redevelopment tracking requirements. Group Members will each modify the general requirements as appropriate to reflect their own jurisdictional specific practices.

REGIONAL STUDIES

Only one regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The MRP states that each Group Members shall be responsible for supporting the monitoring described at the sites falling within their jurisdictional boundaries. The Los Angeles County Flood Control District (LACFCD) will continue its participation in the SMC regional bioassessment monitoring program providing the Permit required funding on behalf of the Group Members.

ADAPTIVE MANAGEMENT

Historically, monitoring was not performed in the WMP area receiving waters prior to the implementation of the CIMP. Therefore, the monitoring specified in the CIMP will be dynamic. Defined triggers are included in the CIMP for adding constituents to the monitoring program or removing them if they no longer pose water quality issues. The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. Monitoring data from the CIMP will tie into the WMP by providing feedback on water quality changes resulting from control measures implemented by the Group Members.

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LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
BPA	Basin Plan Amendment
CCW	Calleguas Creek Watershed
CEDEN	California Environmental Data Exchange Network
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
COC	Chain of Custody
COV	Coefficient of Variance
CRAM	California Rapid Assessment Method
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
DAP	Discharge Assessment Plan
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
EIA	Effective Impervious Area
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
GWQC	General Water Quality Constituents
HRMS	High Resolution Mass Spectrometry
HUC	Hydrologic Unit Code
IC/ID	Illicit Connection/Illicit Discharge
IMP	Integrated Monitoring Program
IWC	In-Stream Waste Concentration
LA	Los Angeles
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation Districts
LCS	Laboratory Control Sample/Standard
LSGR	Lower San Gabriel River
LTA	Long-Term Assessment
MAL	Municipal Action Level
MDL	Minimum Detection Limit
mg/L	Milligram per Liter
µg/L	Microgram per Liter

MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NAL	Non-stormwater Action Levels
NELAP	National Environmental Laboratory Accreditation Program
NPDES	National Pollutant Discharge Elimination System
NSW	Non-Stormwater
NTU	Nephelometric Turbidity Unit
OC	Organochlorine
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
RPD	Relative Percent Difference
RW	Receiving Water
RWL	Receiving Water Limitation
SCCWRP	Southern California Coastal Water Research Project
SGRRMP	San Gabriel River Regional Monitoring Program
SMC	Stormwater Monitoring Coalition
SQO	Sediment Quality Objectives
SSA	Special Study Assessment
SSC	Suspended Sediment Concentration
SW	Stormwater
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TST	Test of Significant Toxicity
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WBPC	Water Body-Pollutant Combination
WLA	Waste Load Allocation
WMA	Watershed Management Area

WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQS	Water Quality Standard

1 Introduction

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) was adopted November 8, 2012, by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in the County of Los Angeles (County) are not causing or contributing to exceedances of water quality objectives set to protect the beneficial uses in the receiving waters. Included as Attachment E to the Permit are requirements for a Monitoring and Reporting Program (MRP). The stated primary objectives for the MRP, listed in Part II.A.1 of the MRP, as follows:

1. Assess the chemical, physical, and biological impacts of discharges from the MS4 on receiving waters.
2. Assess compliance with receiving water limitations (RWL) and water quality-based effluent limitations (WQBELs) established to implement Total Maximum Daily Load (TMDL) wet weather and dry weather wasteload allocations (WLAs).
3. Characterize pollutant loads in MS4 discharges.
4. Identify sources of pollutants in MS4 discharges.
5. Measure and improve the effectiveness of pollutant controls implemented under the Permit.

Group Members have the option to develop a Coordinated Integrated Monitoring Program (CIMP) to specify alternative approaches for meeting the primary objectives of the MRP. Additionally, the CIMP is the vehicle to modify TMDL monitoring requirements and other historical monitoring program requirements, to unify efforts on a watershed scale, and provide consistent and comparable water quality observations throughout the watershed. Modifications to the MRP or TMDL monitoring requirements must satisfy the primary objectives and require sufficient justification to allow the changes. The Regional Board Executive Officer (EO) will provide final approval of the CIMP. The attachments and appendices to this CIMP describe additional background information and detail specific analytical and monitoring procedures that will be used to implement this CIMP. The CIMP meets the requirements of the MS4 Permit, including TMDL monitoring requirements.

1.1 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT PLAN AREA

The San Gabriel River receives drainage from a 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek.

The WMP area is located in the upper east portion of the San Gabriel River Valley. Water bodies within the WMP area include:

- San Dimas Wash;
- Puddingstone Channel;
- Marshall Creek;
- Live Oak Wash;
- Thompson Wash;
- San Jose Creek;
- Chino Creek;
- San Antonio Creek;
- Walnut Creek Wash; and
- Puddingstone Reservoir.

Receiving waters downstream of the WMP area include:

- Santa Ana River;
- Big Dalton Wash;
- San Gabriel River Reach 1, 2, and 3; and
- San Gabriel Estuary.

The geology of the San Gabriel River Valley provides rapid infiltration of water. During dry weather, the upper watershed is likely to be hydraulically disconnected from the lower watershed. A goal of the monitoring in the CIMP will be to establish when the WMP area is hydraulically connected to the downstream water bodies. If there is no flow to the downstream areas, the discharges in the WMP area cannot possibly be causing or contributing to the downstream water quality impairments. Water quality data for the receiving waters in the WMP area are sparse. Future monitoring results will allow the evaluation of whether MS4 discharges are causing or contributing to water quality objective exceedances in receiving waters in the WMP area.

The ESGV Group WMP area is displayed on **Figure 1-1** along with the named water bodies. Size and land uses for the Group Members are listed in **Table 1-1**. Because a portion of the Angeles National Forest and other open spaces overlap the Group Member jurisdictions, not all areas in each jurisdiction are serviced by the MS4 system. For purposes of the CIMP, the areas of or similar to the national forest are excluded from consideration. The areas serviced by the MS4 system for the Group Members and the land use break downs are presented as **Table 1-2**.

The Cities of Claremont and Pomona are addressing the monitoring requirements established in the Middle Santa Ana River Watershed Bacteria Indicator TMDL (Bacteria TMDL) under a separate program, as they are the only members of the group subject to those requirements. Links to the Santa Ana River Bacteria TMDL Comprehensive Bacteria Reduction Plans for the cities of Claremont and Pomona are included as **Attachment A**.

Figure 1-1.
Water Bodies and Geographic Boundary of the ESGV Group

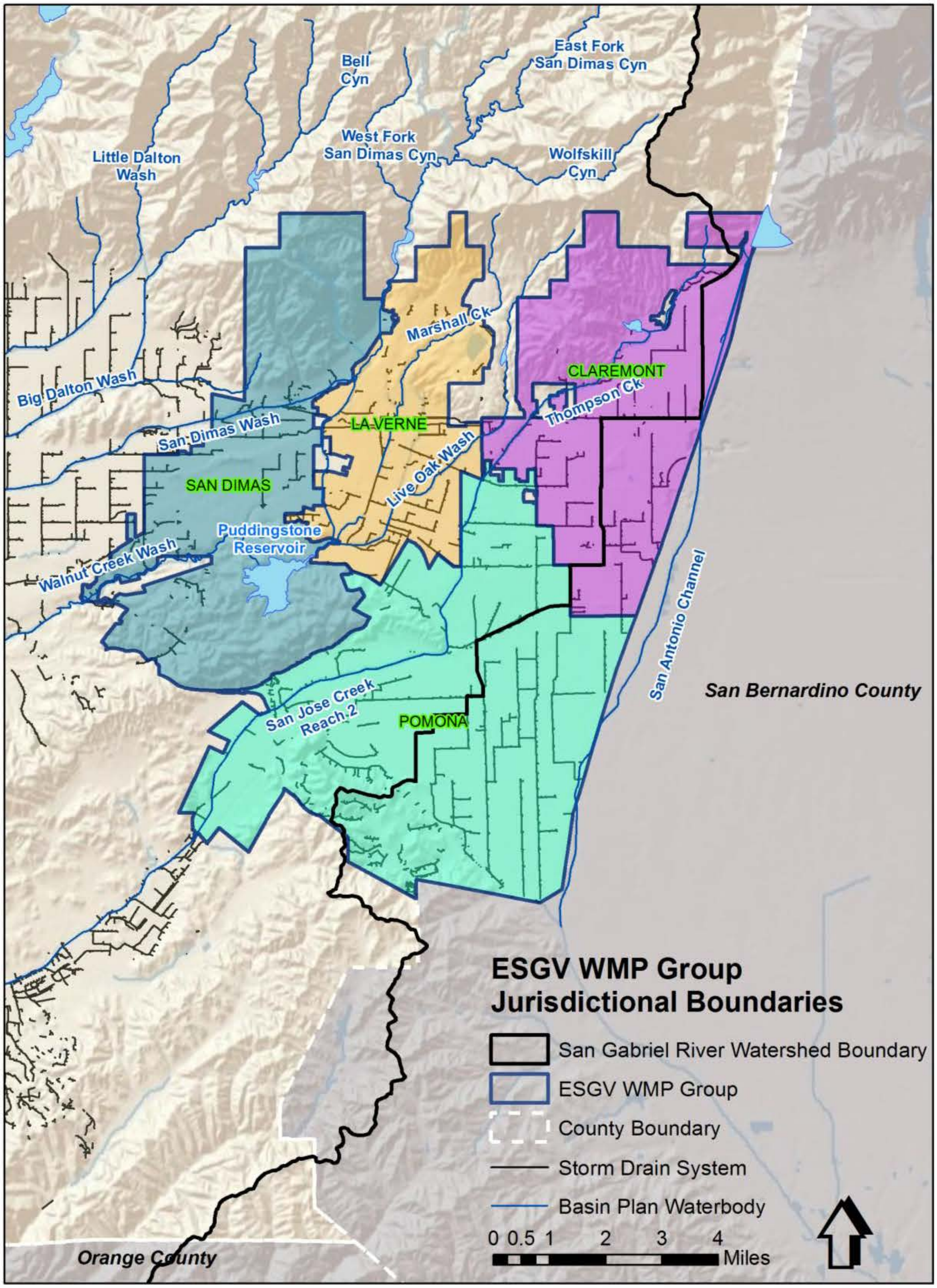

Table 1-1.
List of Group Members with Land Use Summaries within Jurisdictional Boundaries

Group Members	Area (square miles)	Percent of Land Area(1)			
		Res	Com/Ind	Ag/Nur	Open
Claremont	13.0	40	15	<1	45
La Verne	6.3	65	25	2	8
Pomona	21.9	51	34	2	13
San Dimas	14.3	32	9	1	58
All Cities	55.5	45	22	1	32

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the total area considered in the WMP and not just the area covered by the MS4 system.

Table 1-2.
List of Group Members with Land Use Summaries Draining to the MS4 System

Group Members	Area (square miles)	Percent of Land Area(1)			
		Res	Com/Ind	Ag/Nur	Open
Claremont	8	69	25	1	6
La Verne	6	72	20	3	6
Pomona	18	61	32	3	4
San Dimas	7	69	21	3	8
All Cities	38	65	27	2	6

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to area covered by the MS4 system.

1.2 WATER QUALITY PRIORITIES

As part of the WMP development, the available data were analyzed to determine water quality priorities for the watershed. Water quality priorities are based on TMDLs, State Water Resources Control Board (SWRCB) 2010 303(d) List of Impaired Water Bodies (303(d) List), and monitoring data. Based on available information and data analysis, water body-pollutant combinations (WBPCs) were classified in one of the three Permit-defined categories, as described in **Table 1-3**.

The Permit categories are utilized in this CIMP to identify parameters that will be monitored at each receiving water and outfall monitoring site. Since the analysis is waterbody specific, different parameters may be monitored at different monitoring sites.

Table 1-3.
Water Body Pollutant Combination Categories

Category	Water Body-Pollutant Combinations (WBPCs) Included
1	WBPCs for which TMDL effluent or receiving water limitations are established in Part VI.E and Attachments P of the MS4 Permit.
2	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List and for which the MS4 discharges may be causing or contributing.
3	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

1.2.1 Category 1 Constituents

Three TMDLs are applicable to the ESGV Group and include the Dominguez channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbor Toxics TMDL), the San Gabriel River Metals TMDL (Metals TMDL), and the Los Angeles Area Lakes TMDLs for Puddingstone Reservoir (Puddingstone Reservoir TMDLs). The applicable TMDLs are also listed in **Table 1-4.**

Because the San Gabriel River Metals and the Puddingstone Reservoir TMDLs have both wet and dry weather WLAs allocations applied as grouped allocations, the combined loading from all upstream tributaries must meet the allocations at the listed reaches. Monitoring will be necessary to identify the contribution to the loads from the WMP area. The Regional Board adopted a Basin Plan Amendment (BPA) for the San Gabriel River Metals and Selenium TMDL incorporating an implementation plan and schedule on June 6, 2013 and became effective October 13, 2014. The adopted BPA contains general requirements for ambient monitoring and TMDL effectiveness monitoring. However, very specific requirements were incorporated into the MRP.

While the Harbors Toxics TMDL was developed to address impairments in (among other water bodies) San Pedro Bay, the Permit links the Harbors Toxics TMDL to the San Gabriel River watershed, requiring monitoring for all responsible parties subject to the Metals TMDL. Monitoring is necessary to identify the contribution to the loads from the San Gabriel River Watershed Management Area (WMA). The ESGV Group is coordinating with downstream groups to provide support for performing the required sampling.

Similar to the Metals TMDL, the Puddingstone Reservoir TMDLs were promulgated by United States Environmental Protection Agency (USEPA), and implementation provisions, including monitoring, were not explicitly required in the TMDLs. Rather, the TMDLs proposed monitoring recommendations. However, very specific requirements were incorporated into the MRP. The County and LACFCD are monitoring the reservoir water column, benthic sediment, and fish tissue. The ESGV Group will monitor the MS4 discharge to the reservoir. Therefore, monitoring to address the Puddingstone Reservoir TMDL will be performed through the coordination of both groups.

Table 1-4.
TMDLs Applicable to the WMP Area

TMDL	Effective Date or EPA Approval Date	Regional Board Resolution Number
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbors Toxics TMDL)	03/23/2012	2011-008
Los Angeles Area Lakes Toxics and Nutrients TMDL for Puddingstone Reservoir (Lakes TMDL)	3/26/2012	None (USEPA TMDL)
San Gabriel River Metals and Selenium TMDL (Metals TMDL)	03/26/2007	R13-004 (1) (USEPA TMDL)

1 Regional Board adopted the San Gabriel River Metals TMDL Implementation Plan as BPA through resolution R13-004 on June 6, 2013 and became effective October 13, 2014.

1.2.2 Category 2 Constituents

WBPCs on the State Water Resources Control Board's (SWRCB) 2010 Clean Water Act Section 303(d) List that are not already addressed by a TMDL or other action are included as Category 2. All listings within or downstream of the WMP area were identified and included to acknowledge that discharges from upstream reaches could impact the listed area, particularly during wet weather. However, a constituent included in the table does not infer MS4 discharges from the WMP area contribute to the downstream impairment. The 303(d) listed water bodies are presented in **Table 1-5**.

Table 1-5.
Category 2 Water Body-Pollutants for Tributaries in the WMP Area

Constituent	San Gabriel River Reach 1	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1	San Jose Creek Reach 2	Walnut Creek Wash	San Gabriel Estuary
Ammonia				O			
Coliform or other Indicator Bacteria	L	L	L	L	L	L	
Cyanide		L					
TDS				L			
Benthic-Macroinvertebrates						L	
Dioxin							L
Low Dissolved Oxygen							L
Nickel							L
pH	L			L		L	
Toxicity				L			

L - Listed on 2010 303(d) list.
O - Listed on the 2010 303(d) list as being addressed through a single regulatory action (NPDES permit for wastewater discharges)

1.2.3 Category 3 Constituents

Monitoring data for sites within the San Gabriel River WMA was received from the following sources:

- Los Angeles County Department of Public Works (LACDPW) provided long-term monitoring data from the San Gabriel River Mass Emission Station (S14.)
- LACDPW provided temporary monitoring data from the Walnut Creek Wash Tributary Site (TS13.)
- LACDPW provided temporary monitoring data from the San Jose Creek Tributary Site (TS15.)
- The Council for Watershed Health provided monitoring data from their monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN.)
- Los Angeles County Sanitation Districts (LACSD) provided long-term receiving water monitoring data.

Available data were compared to the applicable water quality objectives to determine the additional Category 2 and Category 3 constituents, depending on the frequency of exceedances.

Data received from the Council for Watershed Health (CWH) and CEDEN largely consisted of short term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential water quality objective exceedances. The vast majority of the available sites are for receiving waters downstream from the ESGV Group area. Monitoring data specific to the WMP area is lacking. To estimate the potential constituents of concern in the area, data reflective of receiving waters downstream from the WMP area are considered. Implementation of the CIMP and the adaptive management process will allow the assessment of prioritized constituents, removing those from the prioritization where WMP area monitoring reveals they are not water quality issues. Additionally, new constituents found to be water quality issues will be added to the prioritization. The CIMP revision process is detailed in **Section 10**.

1.3 WATER BODY POLLUTANT COMBINATIONS

Where available, the most recent 10 years of data were analyzed to identify WBPCs. Additionally, the last 5 years of data were analyzed to determine if historical issues were abated and to refine the categorization of WBPCs. Subcategories were identified and created to refine the prioritization process. Those pollutants with measurements exceeding water quality objectives are further evaluated and categorized based on the frequency, timing, and magnitude of exceedances. The WBPCs are placed in the respective subcategories in **Table 1-6**. The ESGV Group is monitoring the outfall to Puddingstone Reservoir, while the County and the LACFCD are performing the in-lake monitoring.

Constituents may change subcategories with new information as the monitoring progresses, source investigations occur, and BMP implementation begins. Where exceedances decrease over time, constituents will be reprioritized or removed from the priority list as watershed actions bring prioritized constituents into compliance. For a constituent that is currently not a priority, if the frequency of water quality exceedances increases, then the constituent would be reevaluated using the prioritization procedure, likely increasing the priority. Due to the natural rate of infiltration, the San Gabriel River and some of the tributaries are dry with the exception of storm flows. Future monitoring will be assessed to establish the disconnect between the upper and lower watershed during dry weather and minor storm events. On establishing the disconnection, the corresponding WBPCs flagged due to downstream water quality issues will be adjusted or removed from the categorization.

1.4 PHASED IMPLEMENTATION OF MONITORING

As there are currently no established monitoring sites within the WMP area, it may not be possible to begin monitoring all aspects of the CIMP within 90 days of Regional Board approval. Receiving water and stormwater outfall sites require site planning, equipment purchase, and installation prior to commencing monitoring. Receiving water and outfall monitoring will begin

July 1, 2015, or 90 days after CIMP approval, whichever is later. The Group Members will begin the non-stormwater outfall screening process summer 2014.

Table 1-6.
Summary of San Gabriel River Watershed Water Body-Pollutant Combinations

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Copper (Dry)							I	I	
	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Copper (Dry)							F	F	
	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1	San Jose Creek Reach 2	Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.

3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

RB-AR3997

2 Receiving Water Monitoring Program

Receiving water monitoring is designed to provide data to determine whether the RWLs and water quality objectives are being achieved and if beneficial uses are being supported. Over time, the monitoring will allow the assessment of trends in pollutant concentrations. The following subsections describe how the MRP requirements for receiving water monitoring will be met within the WMP area.

2.1 RECEIVING WATER MONITORING OBJECTIVES

The objectives of the receiving water monitoring include the following:

- Determine whether the RWL are being achieved;
- Assess trends in pollutant concentrations over time, or during specified conditions; and
- Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.

The following presents the receiving water monitoring sites, monitoring parameters and frequency, and a discussion on monitoring coordination. A summary of how the receiving water monitoring program meets the objectives of the MRP is discussed further below. The approach builds off the MRP requirements, the TMDL monitoring requirements, as well as existing monitoring programs in the watershed. Implementation of the CIMP will replace existing TMDL monitoring programs and meet the monitoring requirements for TMDLs that had not yet developed monitoring programs (e.g., Harbors Toxics TMDL, San Gabriel River Metals TMDL, etc.). Note that the Harbors Toxics TMDL required the development of a monitoring program and quality assurance project plan (QAPP). This CIMP addresses those requirements. While not all aspects of a QAPP are explicitly addressed herein the primary requirements that are not included relate to the implementation of the CIMP (e.g., definition of project manager, lines of communication, and standard operating procedures). These requirements can be addressed once an agency is selected to lead the implementation of the CIMP.

2.2 DESCRIPTION OF RECEIVING WATER MONITORING

Receiving water monitoring is designed to achieve the objectives listed in the permit based on the category of WBPCs applicable to the site. WBPCs prioritizations were utilized to support the development of the monitoring approach. WBPCs were prioritized, as described in **Section 1**. To address the different monitoring objectives and priorities, two types of monitoring are proposed:

- **Long Term Assessment** (LTA) – monitoring is intended to determine if RWLs are achieved, to assess trends in pollutant concentrations over time, and to determine whether designated uses are supported.
- **TMDL** Receiving Water (TMDL) – monitoring is conducted to evaluate attainment of or progress in attaining the TMDL.

While not explicitly established in the MRP, the monitoring types proposed distinguish between the different end goals of monitoring for specific constituents within specific water bodies in the WMP area. LTA monitoring provides a long term record to understand conditions within the WMP area, for a robust suite of parameters. TMDL monitoring addresses TMDL related constituents. WBPCs on the 303(d) list, or those meeting the listing requirements and have exceeded receiving water objectives, will be monitored at the LTA and appropriate TMDL sites.

The receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP, receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not, on its own, indicate MS4 discharges caused or contributed to the RWL exceedance, as the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges. The exceedance of a RWL may have been caused or contributed to by a non-MS4 source. A determination regarding whether MS4 discharges caused or contributed to a RWL exceedance should be made using data collected through outfall monitoring.

2.3 RECEIVING WATER MONITORING SITES

The MRP requirements include receiving water monitoring sites at previously designated mass emission stations, TMDL receiving water compliance points, and additional receiving water locations representative of the impacts from MS4 discharges. As there are no existing mass emission stations in the WMP area, the ESGV Group will establish a new LTA site representative of the WMP area. The number of required receiving water monitoring sites is not specified in the MRP, however, the tributaries leaving the WMP area are sited for monitoring. Approximate locations of the proposed monitoring sites for the ESGV Group are shown in **Figure 2-1.** A field assessment was conducted and locations were identified based on the field assessments on December 26, 2013, and January 17, 2014. Summaries of the site selection assessments and proposed location photographs are presented in **Attachment B**.

2.3.1 Long Term Assessment Site

The LTA site is located to fulfill one of the primary objectives of receiving water monitoring; to assess trends in pollutant concentrations over time or during specified conditions. As a result, the primary characteristic of an ideal monitoring site is a robust dataset of previously collected monitoring results so that trends in pollutant concentrations over time, or during specified

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conditions, can be assessed. A new LTA site was identified to support understanding of potential impacts associated with MS4 discharges from the ESGV Group. The site receives drainage predominantly from La Verne. However, the land use for all four cities for the ESGV Group are similar and therefore will be reflective of the water quality in receiving waters leaving the WMP area.

The proposed LTA site meets the receiving water objectives and supports an understanding of potential impacts associated with MS4 discharges. However, receiving water sites are intended to assess receiving water conditions. An exceedance of a receiving water limitation at a receiving water site does not, on its own, represent an exceedance of a receiving water limitation that was caused by or contributed to by MS4 discharges as these sites also receive runoff from non-MS4 sources, including open space and other permitted discharges.

The LTA monitoring site will be located on Live Oak Wash between the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash; and the discharge into Puddingstone Reservoir. The proposed site is located on **Figure 2-1**. The LTA monitoring site will also be utilized to support TMDL monitoring. Since Live Oak Wash is a soft-bottomed channel and irregularly shaped, flow may be measured within each of Puddingstone Channel, Marshall Creek, and Live Oak Wash and totaled. However, flow will be measured at the located LTA site if a suitable stage-flow rating curve can be developed to determine storm flows without having to enter the channel. Photographs of the LTA site can be found in **Figures 2-2** through **2-4**. Additional photographs and flow monitoring locations evaluated for the LTA site are included in **Attachment A**. Exact placement of the site will be dependent on site engineering constraints.

Figure 2-1.
Overview of Receiving Water Monitoring Sites

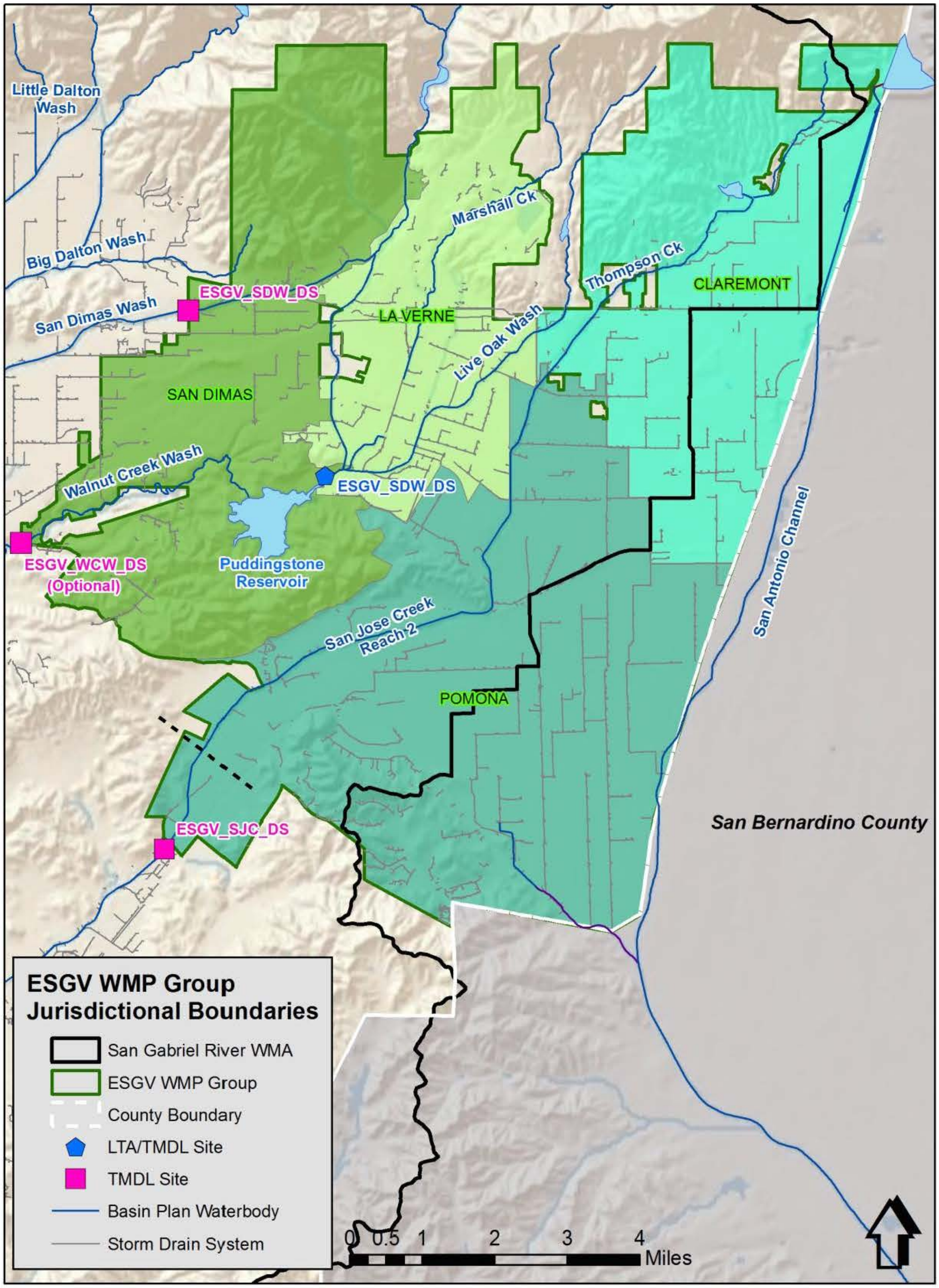


Figure 2-2.
ESGV_LOW_DS Site Looking Upstream in the Soft Bottom Portion of the Channel

Figure 2-3.
ESGV_LOW_DS Site Looking Downstream

Figure 2-4.
Confluence of Channels Discharging to Puddingstone Reservoir at Transition Between Hard and Soft Bottom Channel.

TMDL Sites

Within the WMP area, Metals TMDL monitoring sites are required in San Jose Creek Reaches 1 and 2 and Walnut Creek Wash. Given that San Jose Creek Reach 1 extends for greater than 13 miles and only approximately 1 mile is located within the WMP area, a combined TMDL site will be utilized for San Jose Creek Reaches 1 and 2. The San Jose Creek TMDL site will be located at the downstream intersection of San Jose Creek and the ESGV Group boundary. The proposed sites for the ESGV Group are located on **Figure 2-1**, and are as follows:

- San Jose Creek at the crossing of the Pomona city line (ESGV_SJC_DS.)
- San Dimas Wash at the crossing of the San Dimas city line (ESGV_SDW_DS.)
- Walnut Creek Wash between Puddingstone dam and the jurisdictional boundary of San Dimas (ESGV_WCW_DS.)

Given that Puddingstone Reservoir discharges to Walnut Creek Wash, that Puddingstone Reservoir is under the jurisdiction of Los Angeles County, and that lake processes can affect the concentration of constituents in the downstream receiving waters, the ESGV Group is concerned that conducting receiving water monitoring within Walnut Creek Wash would not be representative of the ESGV Group's MS4 discharge. Walnut Creek Wash is proposed as an optional site to be evaluated by the ESGV Group if downstream exceedances are measured and the decision is made to further determine the contribution from the WMP area. As Puddingstone Reservoir is in a County park and operated by the LACFCD, the ESGV Group Members will not

monitor within the Lake. The LTA site on Live Oak Wash will also serve to monitor discharges to Puddingstone Reservoir.

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD.

All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed by two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Photographs of the San Jose Creek TMDL site, ESGV_SJC_DS, are included in **Figure 2-5** and **Attachment B**.

Figure 2-5.
San Jose Creek TMDL site ESGV_SJC_DS Looking Upstream

A TMDL monitoring site is located at the intersection of San Dimas Wash and the ESGV Group boundary, indicated as site ESGV_SDW_DS on **Figure 2-1**. Photograph of the San Dimas Wash site are included in **Figure 2-6** and **Attachment B**.

Figure 2-6.
San Dimas Wash TMDL Site, ESGV_SDW_DS, Looking Downstream

An optional TMDL monitoring site is located on Walnut Creek Wash. If the ESGV Group decides to determine the contribution from the WMP area, the site will be triggered. The TMDL monitoring site will be located between the Puddingstone dam and the ESGV Group boundary downstream of N Reeder Street, indicated as site ESGV_WCW_DS on **Figure 2-1**. A photograph of a potential location for ESGV_WCW_DS is presented as **Figure 2-7**.

Figure 2-7.
Walnut Creek Wash TMDL Potential Site Looking Upstream.

2.4 MONITORED PARAMETERS AND FREQUENCY OF MONITORING

The MRP clearly defines the default required parameters and frequency for receiving water monitoring. A general summary of the frequency of monitoring and of parameters identified in the MRP for receiving water monitoring are presented in **Table 2-1**. The program will generally operate three wet weather events per year, including the first significant rain event of the storm year. For the San Jose Creek receiving water site a fourth storm will be targeted for monitoring metals and associated constituents. After the first year of monitoring at the San Jose Creek site, the data will be evaluated to determine if three storms provide sufficient information. If three storms are found to provide sufficient information, a reduction in monitoring to three storms per year will be requested from the Regional Board. Additionally, the program will operate two dry weather events per year, conducted in January and July. However, not all parameters will be monitored each event. The frequency of monitoring for wet and dry events is specified by site in **Table 2-1**. For toxicity, monitoring will be conducted during two wet weather events per year and during the one dry weather event that takes place coincident with the summer dry weather sampling event. The ESGV Group does not have historical flow data to determine base flow conditions within the Group's receiving waters. Therefore, during the first year of monitoring, wet weather conditions will be defined as when greater than 0.25 inches of precipitation has fallen within the previous 24-hour period. Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will be assessed with applicable water quality objectives after the first year of LTA monitoring. Analytical methods, detection limits, sampling methods, and sample handling procedures are detailed in **Attachment D**. In addition, details regarding the collection of quality assurance/quality control (QA/QC) samples are outlined in **Attachment D**.

Initially, at the San Jose Creek site, Metals TMDL ambient monitoring will be conducted at a frequency of four wet and two dry events. The Metals TMDL specifies four wet weather events annually for effectiveness monitoring. However, after the first year of monitoring at the San Jose Creek site the data will be evaluated to determine if reducing monitoring frequency to three events per year will provide sufficient data. If three events of wet-weather data can provide sufficient data, the ESGV Group will request a reduction in sampling frequency. If a reduction in sampling is appropriate, the frequency of supporting parameters will likewise be reduced. The supporting parameters include: flow and field parameters, TSS, and hardness.

Table 2-1.
Annual Frequency and Duration of Receiving Water Monitoring
During Wet and Dry Weather Conditions

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	San Jose Creek	San Dimas Wash	Walnut Creek Wash
Flow and field parameters(1)	3/2	4/2	3/2	3/2
Table E-2 Pollutants(2)	1(3)/1(3)	(4)	(4)	(4)
Toxicity	2/1	(5)/0		
TIE Identified Pollutants	(6)	(6)	(6)	(6)
TSS and Hardness	3/2	4/2	3/2	3/2
Alkalinity	3/2	3/2		
Ammonia	3/2	3/2		
TKN or Organic N, Nitrate, Nitrite,	3/0			

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	San Jose Creek	San Dimas Wash	Walnut Creek Wash
Orthophosphate, and Total Phosphorus				
TDS, Chloride, and Sulfate	2/2	0/2	0/2	0/2
Mercury	2/2			3/2
Methylmercury	2/0			
TOC	2/0			
Total PCBs(7), Total Chlordane, Dieldrin, and Total DDTs(8)	1(9)/0			
Copper(10)	3/2	4/2	3/2	3/2
Lead(10)	3/2	4/2	3/2	3/2
Zinc(10)	3/2	4/2	3/2	3/2
Selenium		4/2		3/2
E. coli	3/2	3/2	3/2	3/2
Cyanide		3/2		
PAHs(11)		3/2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, and specific conductivity.

2 All pollutants identified in Table E-2 of the MRP that are not otherwise addressed by monitoring at the LTA.

3 Monitoring frequency only applies during the first year of monitoring. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) for its respective test method or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective, additional monitoring will be conducted under condition with observed exceedance (i.e., the monitoring frequency will become 3/2 if exceedances are observed during dry and wet weather, the monitoring frequency will become 3/0 if exceedances are observed during wet weather only, and the monitoring frequency will become 0/2 if exceedances are observed during dry weather only).

4 Pollutants identified for additional monitoring from Table E-2 under condition with observed exceedance in first year. For constituents with no measured exceedances and not otherwise addressed by monitoring at the LTA station, monitoring will discontinue.

5 Where wet weather monitoring of the San Gabriel River at the mass emission site S14 or the LTA site observes toxicity and a subsequent TIE is inconclusive, wet weather toxicity will be initiated. Where dry weather monitoring by either LACSD of San Jose Creek or the ESGV at the LTA site observes toxicity and a subsequent TIE is inconclusive, dry weather toxicity will be initiated. Toxicity monitoring will commence at the scheduled event following notification of TIE results.

6 Where wet weather monitoring of the San Gabriel River at the mass emission site S14 or the LTA site observes toxicity and a subsequent TIE identifies a pollutant(s), the pollutant(s) will be added to the wet weather monitoring list. Where dry weather monitoring by either LACSD of San Jose Creek or at the LTA site observes toxicity and a subsequent TIE identifies a pollutant(s), the pollutant(s) will be added to the dry weather monitoring list. The monitoring for the additional pollutant(s) will commence at the scheduled event following notification of TIE results.

7 PCBs includes analyses for all aroclor species when analyzed in water and the following 54 PCB congeners when analyzed in water or suspended solids: 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95,

97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209

8 DDT is defined as the sum of 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

9 Suspended sediment samples will be collected and analyzed for listed parameters, in addition to water column concentrations.

10 Total and dissolved.

11 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

Data collected through monitoring will be reviewed and changes to the constituents and frequencies listed in **Table 2-1** will be discussed in the annual report and implemented starting no later than the first scheduled CIMP event of the next monitoring year, which corresponds to the first applicable event after July 1 following the annual report submittal. The processes for determining appropriate changes to monitoring are listed in **Section 10**.

2.5 MONITORING COORDINATION

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD. All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed through two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Opportunities potentially exist to coordinate with other watershed management groups for receiving water monitoring. The planned coordination to achieve the required Metals TMDL monitoring is an example of the coordination opportunities. The CIMP is written to outline the monitoring requirements to assess the ESGV Group MS4. Coordination with other watershed management groups may occur in the future, where data from other programs may be used to fulfill ESGV Group requirements.

2.6 RECEIVING WATER MONITORING SUMMARY

Three sites are selected in the WMP area to address the receiving water monitoring program objectives. An additional optional site will be triggered by the ESGV Group in the event it becomes necessary to evaluate the potential contribution of constituents from the WMP area to downstream areas. The optional site will be triggered if downstream exceedances are observed for constituents not already being addressed by the WMP area. The receiving water sites are summarized in **Table 2-2**. None of the identified sites have been monitored as part of historical or existing monitoring programs. The County and LACFCD will perform monitoring in Puddingstone Reservoir. Estuary monitoring will be fulfilled by LACSD during dry weather and the Lower San Gabriel River EWMP group during wet weather per the Harbor Toxics TMDL to assess the potential of metals contribution to toxicity.

Table 2-2.
Summary of ESGV Group Receiving Water Monitoring Sites

Site ID	Water Body	Coordinates		Monitoring Type	
		Latitude	Longitude	LTA	TMDL
ESGV_LOW_DS	Live Oak Wash	34.094064	-117.792934	X	X
ESGV_SJC_DS	San Jose Creek	34.032233	-117.824894		X
ESGV_SDW_DS	San Dimas Wash	34.121341	-117.820088		X
ESGV_WCW_DS(1)	Walnut Creek Wash	34.086672	-117.845592		X

1 Optional site to be triggered by the ESGV Group to evaluate contribution of constituents from the WMP area in the event downstream exceedances are observed

A summary of how the ESGV receiving water monitoring program meets the intended objectives of the receiving water monitoring program outlined in Part II.E.1 of the MRP is presented in **Table 2-3**.

Table 2-3.
Summary of Receiving Water Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether the RWLs are being achieved.	○ Four total receiving water monitoring sites. Three planned sites and one optional site. ○ Receiving water monitoring sites located as required by TMDLs. ○ Constituents added for monitoring based on the water quality priorities (i.e., the constituents at the highest risk of exceeding RWLs).
Assess trends in pollutant concentrations over time, or during specified conditions.	○ LTA station will be established within the WMP area. ○ Monitoring during dry weather and wet weather ○ Constituents added for monitoring based on the water quality priorities.
Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.	○ At least one monitoring site located in the majority of water bodies specified in the Basin Plan. ○ Aquatic toxicity monitoring to be conducted during dry and wet weather. ○ Constituents added for monitoring based on the water quality priorities.

3 MS4 Database

The objective of the MS4 database is to geographically link the characteristics of the outfalls within the WMP area with watershed characteristics including: subwatershed, water body, land use, and effective impervious area. The information will be compiled into geographic information systems (GIS) layers.

3.1 PROGRAM OBJECTIVES

A GIS-based database of the MS4 storm drains and outfalls is required as part of the CIMP. The database structure must accommodate the following data fields:

1. Surface water bodies within the ESGV Group
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
4. Effective Impervious Area overlay
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry weather diversions
8. The location of all major MS4 outfalls within the ESGV Group. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually)
10. Storm drain outfall catchment areas for each major outfall within the ESGV Group
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a) Ownership
    b) Coordinates
    c) Physical description
    d) Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    e) Determination of whether the outfall conveys significant non-stormwater discharges.
    f) Stormwater and non-stormwater monitoring data

Available GIS data was reviewed to determine which components were available to populate the database for submittal with the CIMP. Available information includes components 1, 2, 3, 5, 6, 7, and 11.b. For the remaining components (4, 8, 9, 10, 11.a, 11.c, 11.d, 11.e, and 11.f) the ESGV Group will gather the information upon implementation of the non-stormwater outfall screening program in the summer of 2014. All outstanding data will be collected upon

completion of the non-stormwater outfall screening. Based on the review of the GIS data, the components were divided into two categories: (1) available information being submitted with the CIMP, and (2) pending information that will be submitted after completion of the non-stormwater outfall and screening and monitoring program.

3.2 AVAILABLE INFORMATION

The following data are being submitted as a map and/or in a database concurrently with the CIMP (note, the numbering corresponds to the item number in the Permit list):

1 Surface water bodies within the ESGV Group.
2. Sub-watershed (HUC-12) boundaries.
3. Land use overlay.
5. Jurisdictional boundaries.
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes).
7. The location of all dry weather diversions.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    b. Coordinates

3.3 PENDING INFORMATION

Collecting the following data is an ongoing effort. The data are not currently available for submittal with the CIMP. The MS4 database will be populated as the data are collected. As the data are collected the database will be updated. The annual reports will include the updated database. The fields that will be updated through implementation of the CIMP include:

4. Effective impervious area overlay.
8. The location of all major MS4 outfalls within the Group Members' jurisdictional boundary.
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually).
10. Storm drain outfall catchment areas for each major outfall within the Group Member's jurisdiction.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time

e. Determination of whether the outfall conveys significant non-stormwater discharges.

f. Stormwater and non-stormwater monitoring data.

The information necessary to determine pending elements will be generated as an outcome of implementing the non-stormwater outfall program as noted in the **Table 3-1.** footnotes. A schedule for completing each of the elements is provided. As the data become available, they will be entered into the GIS and water quality databases. Each year, the storm drains, channels, outfalls, and associated databases will be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharge. Updates will be included as part of the annual reporting to the Regional Board.

Table 3-1.
MS4 Database Elements to Be Developed

Database Element	To Be Developed	Date of Submission
Effective Impervious Area (EIA) overlay.	---	As Available
Notation of outfalls with significant non-stormwater discharges (to be updated annually).	X[(1)]	December 2015
Detailed analysis of storm drain outfall catchment areas for any new outfall monitoring locations, outfalls identified as having significant non-stormwater discharges, and outfalls addressed by structural best management practices (BMPs).	X[(2)]	Ongoing
Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time	X[(3)]	December 2015
Determination of whether the outfall conveys significant non-stormwater discharges.	X[(1)]	December 2015
Stormwater and non-stormwater monitoring data	X[(4)]	Ongoing

1. The determination of significant will be made after the initial screening process outlined in this CIMP is completed.
2. Storm drain outfalls were linked in the database to the modeling subwatersheds to provide information on the contributing areas. Detailed analysis of storm drain outfall catchment areas for the stormwater outfall monitoring sites have been developed and additional detailed analysis for any new outfall monitoring locations, outfalls identified as having significant nonstormwater discharges, and outfalls addressed by structural BMPs will be conducted as needed.
3. These data will be gathered as part of the screening and monitoring program and will be added to the database as they are gathered.
4. These data will be gathered as part of the screening and monitoring program and will be added to a separate water quality database as they are gathered.

4 Stormwater Outfall Monitoring

Stormwater outfall selection and monitoring requirements are discussed below.

4.1 PROGRAM OBJECTIVES

Stormwater outfall monitoring of discharges from the MS4 support meeting three objectives including:

- Determine the quality of stormwater discharge relative to municipal action levels.
- Determine whether stormwater discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs.
- Determine whether the discharge causes or contributes to an exceedance of receiving water limitations.

4.2 STORMWATER OUTFALL MONITORING SITES

The primary criteria for the stormwater outfall monitoring program is selecting monitoring sites that are representative of the range of land uses in the WMA and provide accurate data for measuring flows and characterizing pollutant loads. The Permit provides default requirements for one outfall site per jurisdiction per HUC-12. The HUC-12 equivalent drainage areas are used in the analysis and represent the United States Geological Survey (USGS) HUC-12s modified to account for the MS4 system. The Regional Board approved the HUC-12 equivalent drainages for use in the WMP and CIMP process. The default procedure in the Permit was modified to select one outfall per HUC-12. The Permit allows an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. To facilitate the approval of the outfall selection process, the proposed process is demonstrated to achieve equivalent monitoring in **Attachment E**. The following subsections outline the approach to meet the MS4 Permit requirements related to stormwater outfall monitoring.

There are four HUC-12s within the WMP area that include MS4 serving the Group Members. The San Dimas Wash HUC-12 covers a minor portion of the WMP area and is similar in land use to the neighboring Big Dalton Wash HUC-12. As a result, no stormwater outfall monitoring site will be located in the San Dimas Wash HUC-12. A representation of the WMP area with highlighted HUC-12 areas is presented in **Figure 4-1**. The selected monitoring sites are shown on the Figure. Field verification of the sites was performed on December 26, 2013 and January 17, 2014.

One monitoring site for each of the remaining HUC-12s that include MS4 will be monitored. The three stormwater outfall monitoring sites are presented in **Figure 4-1**. The selected sites are representative of the land uses within each respective HUC-12. The catchment areas for each

selected drain are displayed with land use in **Figure 4-2**. The data collected at the monitored outfalls will be considered representative of all MS4 discharge within the respective HUC-12. The resulting data will be applied to all Group Members represented by the site, regardless of whether a site is located within a particular jurisdiction or received flow from that land area. Compliance for Group Members with WQBELs and RWLs may be based on comingled discharges or data not collected within an individual jurisdiction.

Figure 4-1.
HUC-12 Drainage Areas Corresponding to the WMP Area.

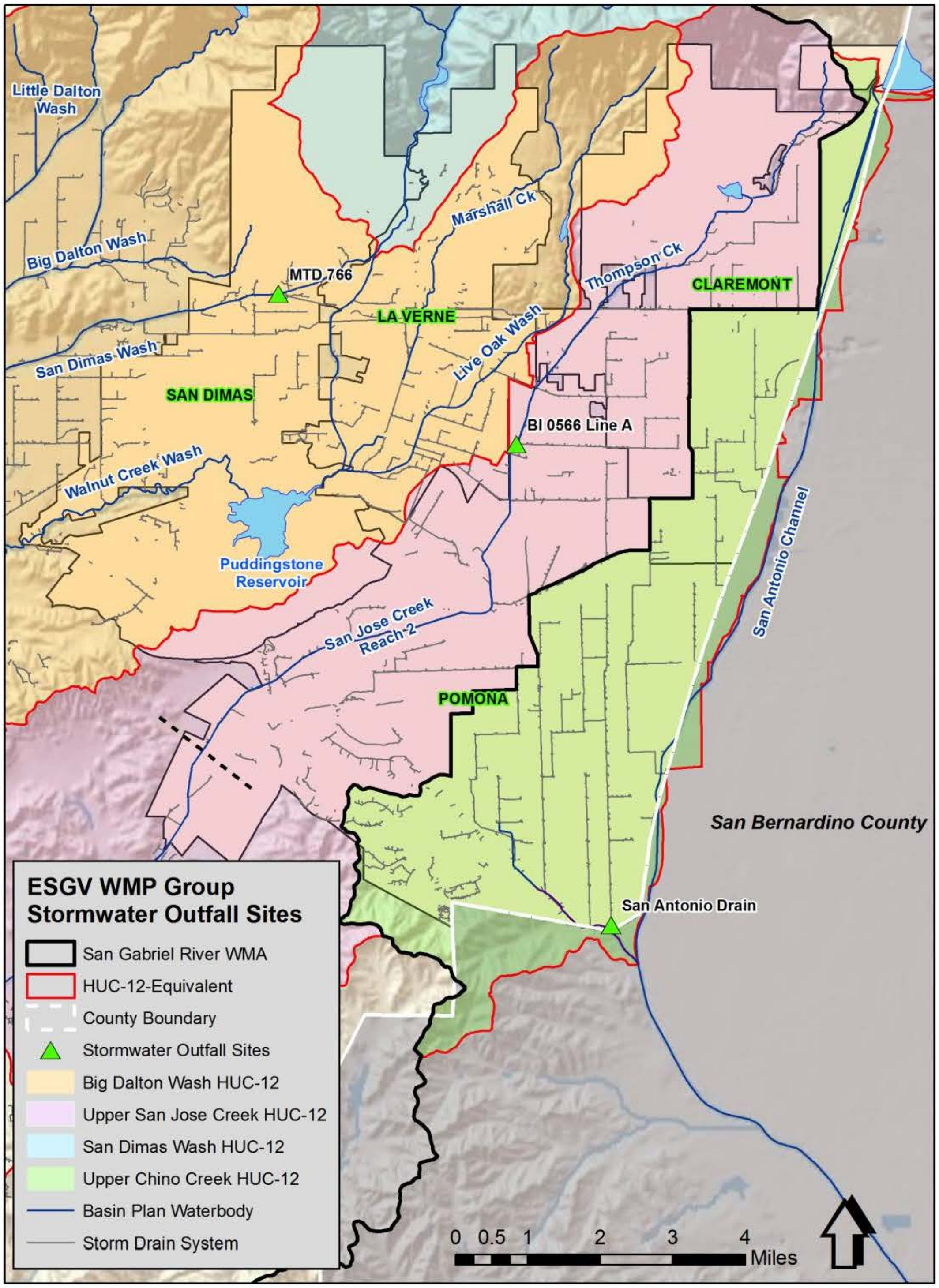
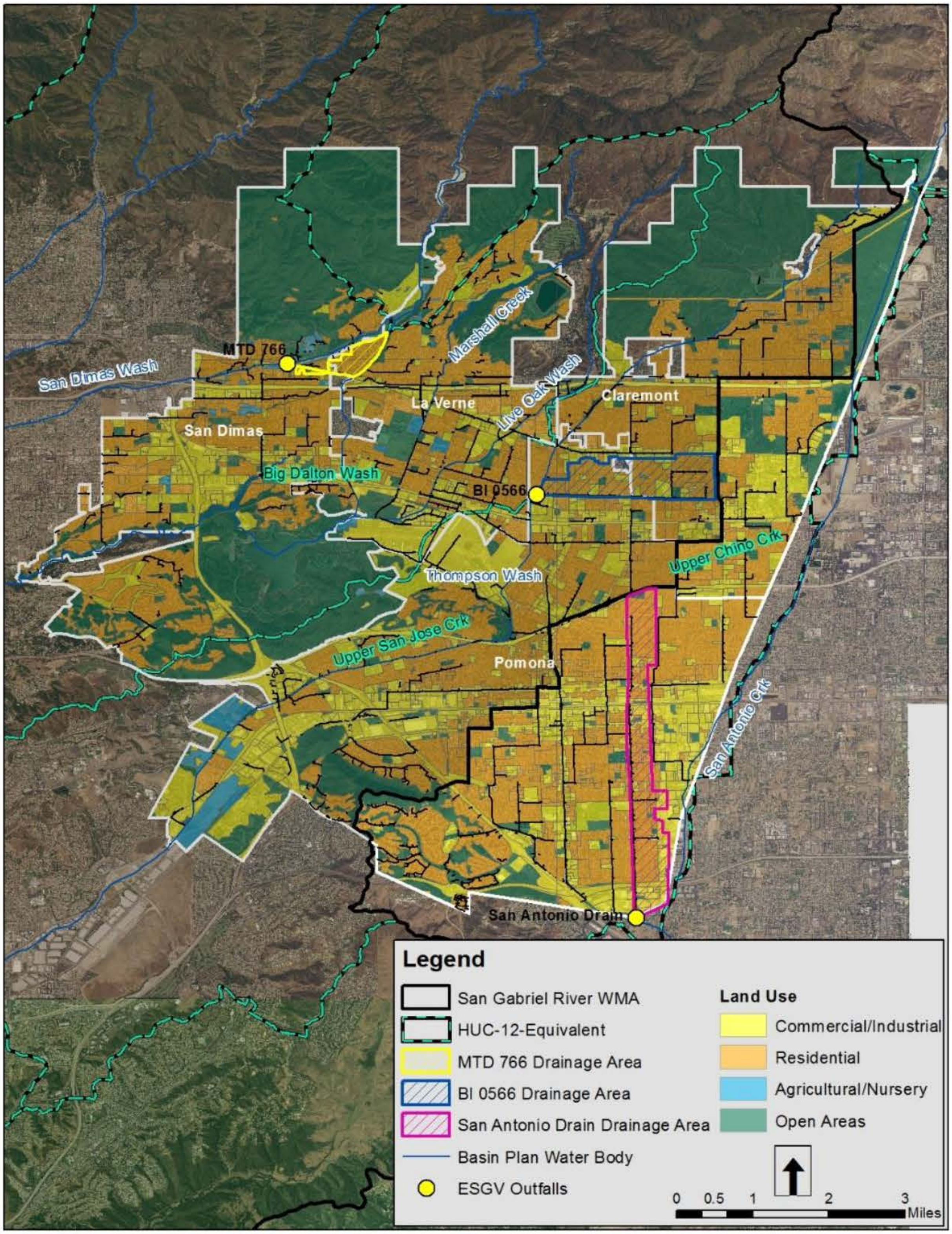


Figure 4-2.
Stormwater Outfall Monitoring Sites



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The stormwater outfall monitoring sites in the ESGV WMP area are summarized in **Table 4-1**. The land uses within the outfall catchment area for the selected drains are incorporated in **Table 4-2**.

Table 4-1.
Summary of Stormwater Outfall Monitoring Sites in the ESGV WMP Area

HUC-12	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Upper San Jose Creek	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468
Upper Chino Creek	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

1 Drain eventually discharges to water body.
2 Manhole location.

Table 4-2.
Relative Land Use Area within Drain Area to Stormwater Outfall Sites

HUC-12	Area	Percent of Land Area(1)			
		Res	Com/Ind	Ag/Nur	Open
Big Dalton Wash	HUC-12(2)	68	23	2	6
	MTD 766	87	12	1	<1
Upper San Jose Creek	HUC-12(3)	66	29	1	4
	BI 0566 Line A	76	22	<1	2
Upper Chino Creek	HUC-12	71	33	<1	5
	San Antonio Drain Unit 1	71	27	<1	2

1 Land use classifications include: residential (res), commercial and industrial (com/ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the MS4 area considered in the WMP.
2 Big Dalton Wash HUC-12 includes Puddingstone Reservoir and County Park, downstream of the selected outfall. The catchment area is similar to the HUC-12 land use upstream of Puddingstone.
3 Includes portion of the Angeles National Forest. Land use of HUC-12 over MS4 area similar to selected drain catchment.

The stormwater outfall monitoring sites for the three major HUC-12s that cover the ESGV Group are presented in the following subsections. Photographs of each of the stormwater outfall monitoring sites are included in **Attachment B**.

While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety

issues under storm conditions. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites would need to be selected. To facilitate switching outfall locations, alternate sites for each HUC-12 are listed in **Attachment F**. The alternate sites would only become active if the original selection was deemed unrepresentative of the MS4 discharge in the HUC-12.

4.2.1 Big Dalton Wash HUC-12

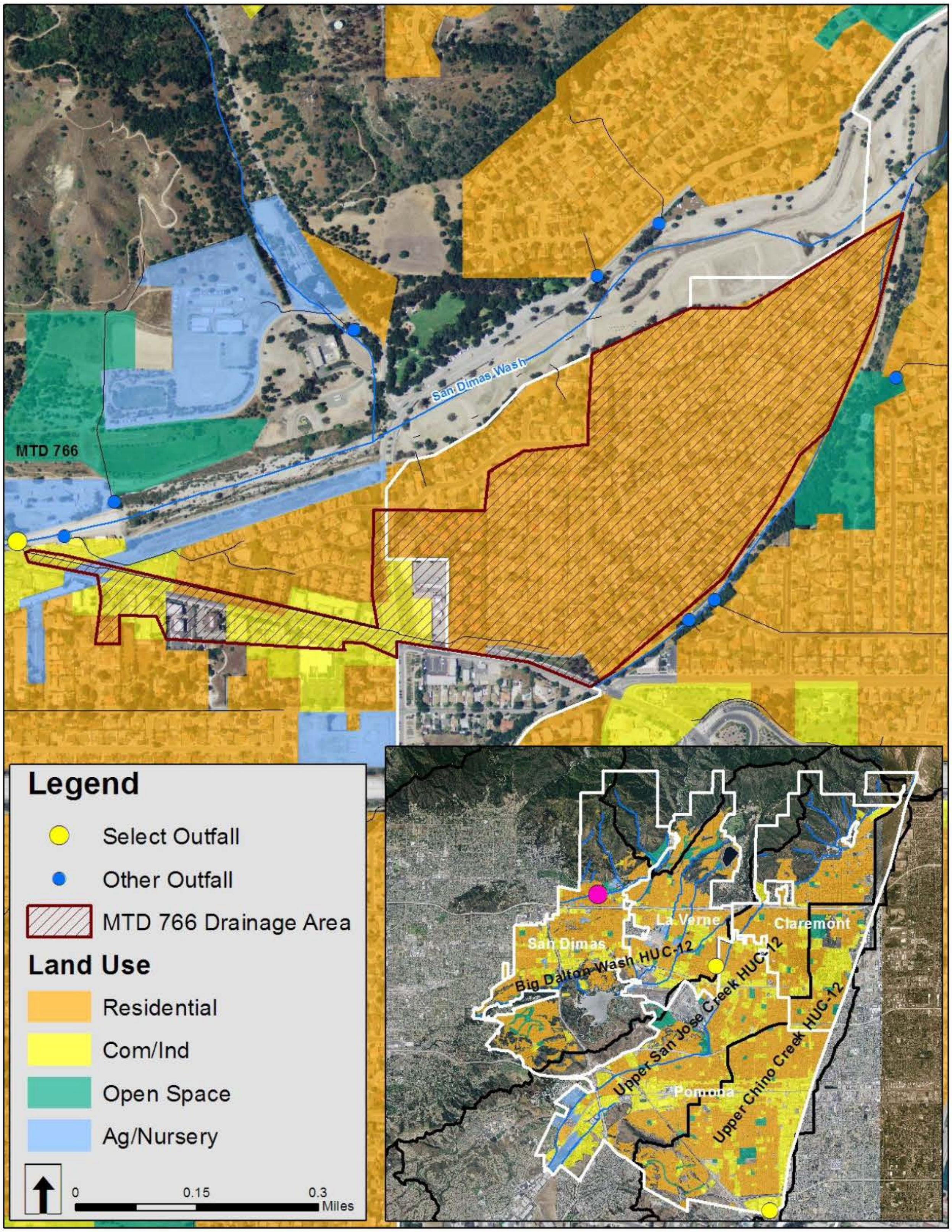
Big Dalton Wash is the largest of the three main HUC-12s for the ESGV Group, and it primarily covers the cities of San Dimas and La Verne. Primary land use types include: 87% residential; 8% open space; and 12% commercial/industrial. The large area of open space in the Big Dalton Wash HUC-12 is primarily due to land associated with the Puddingstone Reservoir which is under the jurisdiction of the County and LACFCD, and not a part of the ESGV Group. Relevant details for the stormwater outfall monitoring site in the Big Dalton Wash HUC-12 are presented in **Table 4-3**.

Table 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215

The primary factor contributing to the selection of the MTD 766 site is its representativeness of primary land uses within its estimated drainage area with respect to the HUC-12. The outfall, estimated drainage area, and land uses are shown on **Figure 4-3**. Other factors that contributed to the selection of the MTD 766 site include space for the placement of a permanent sampling station (if desired), safe and easy access, and all public property to access sampling equipment.

Figure 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12



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4.2.2 Upper San Jose Creek HUC-12

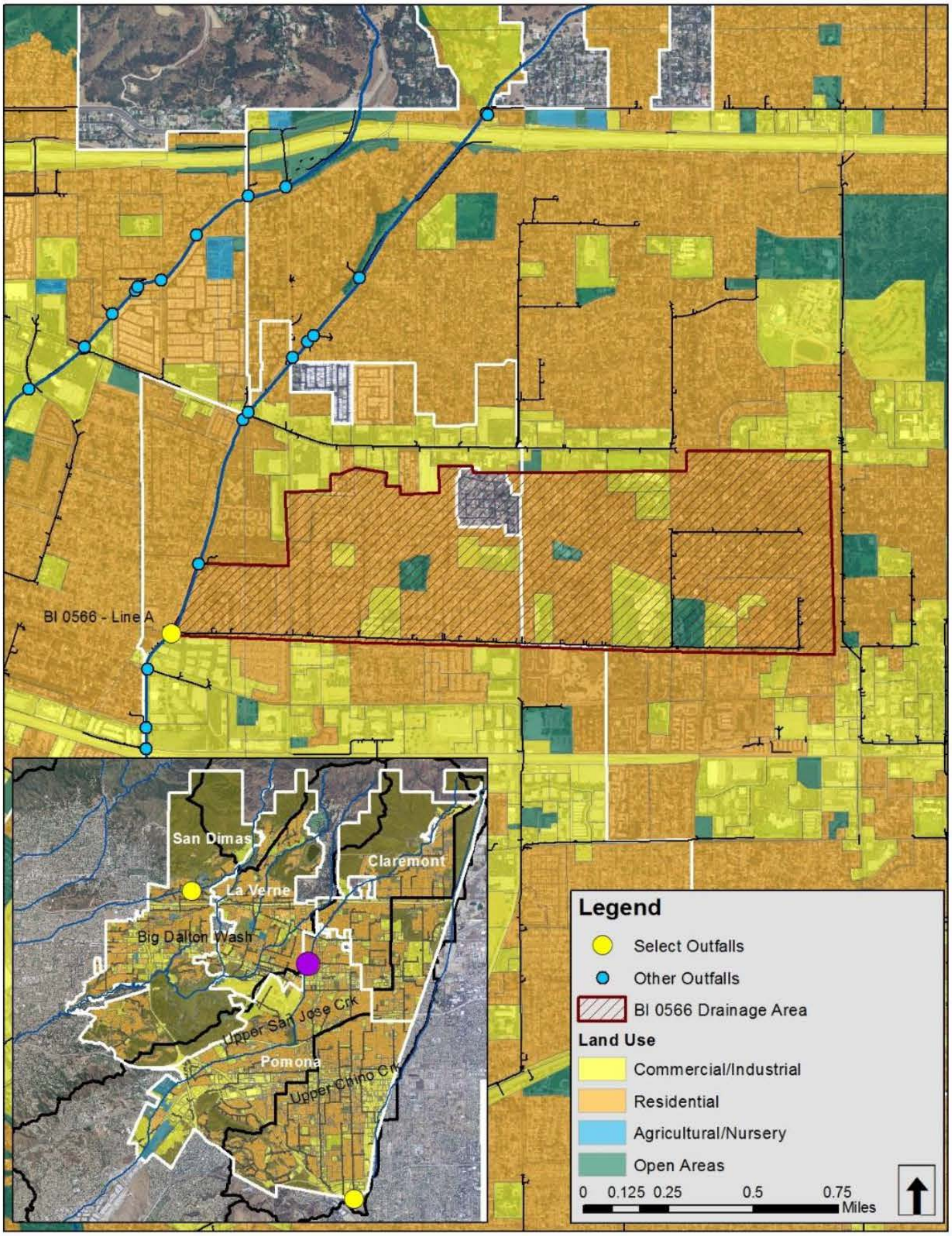
Upper San Jose Creek is the second largest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont. Primary land use types include: 66% residential; 29% commercial/industrial; and 4% open space. Relevant information for the stormwater outfall monitoring site in the Upper San Jose Creek HUC-12 are detailed in **Table 4-4**.

Table 4-4
Outfall monitoring Site – Upper San Jose Creek HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468

The primary factor contributing to the selection of the BI 0566 Line A site is the representativeness within its estimated drainage area of the surrounding HUC-12 with respect to the primary land uses. The outfall location, estimated drainage area, and land uses are displayed on **Figure 4-4**. Other factors that contributed to the selection of the BI 0566 Line A site include available space for a permanent sampling station, if determined necessary, safe and easy access, all public property, availability of a safe and accessible upstream manhole that could serve as an alternate sampling location if the outfall could not be directly sampled, and receipt of drainage from both the Cities of Claremont and Pomona. Bacteria monitoring data collected at BI 0566 Line A will also be used to evaluate compliance with the Santa Ana River Bacteria TMDL per the Bacteria TMDL monitoring outlined in **Attachment A**.

Figure 4-4.
Stormwater Outfall Monitoring Site – Upper San Jose Creek HUC-12



4.2.3 Upper Chino Creek HUC-12

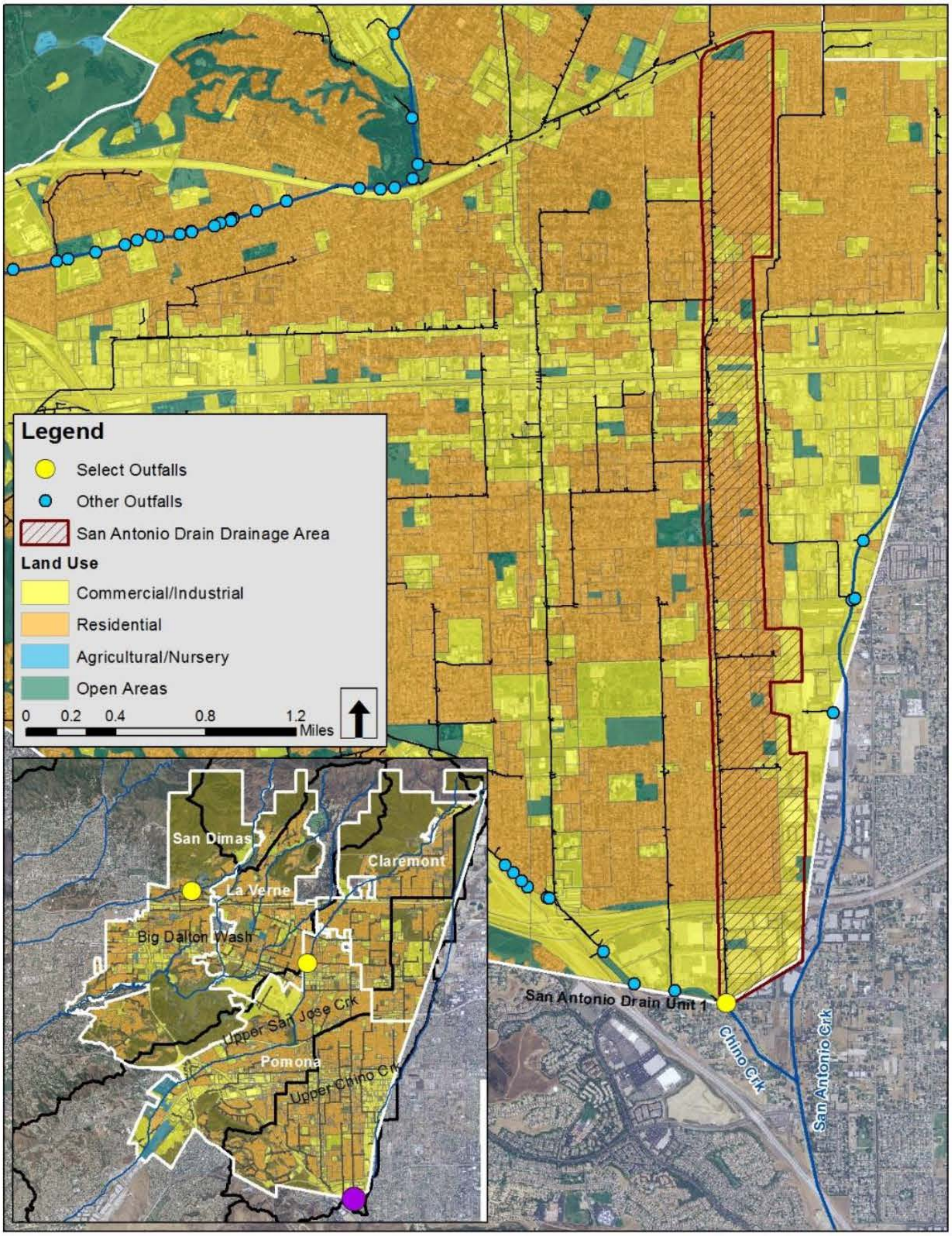
Upper Chino Creek is the smallest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont, but also covers minor portions of jurisdictions outside of the ESGV Group. Primary land use types include: 71% residential; 33% commercial/industrial; and 5% open space. **Table 4-5** details relevant information for the stormwater outfall monitoring site in the Upper Chino Creek HUC-12.

Table 4-5
Stormwater Outfall monitoring Site – Upper Chino Creek HUC-12

HUC-12	City	Name	Size	Shape	Material	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

The primary factor contributing to the selection of the San Antonio Drain Unit 1 site is its representativeness within its estimated drainage area with respect to the primary land uses of the HUC-12. The outfall, drainage area, and respective land uses are shown on **Figure 4-5**. Because the outfall is located outside of the WMP area, sampling will occur at the nearest upstream manhole. Other factors that contributed to the selection of the San Antonio Drain Unit 1 site include being located on a street with a low volume of traffic, being located on a street large enough to where traffic can easily be diverted around the sampling location without lane closure, safe and easy access for set-up and tear-down of autosampling equipment, and all public property.

Figure 4-5
Stormwater Outfall Monitoring Site – Upper Chino Creek HUC-12



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4.3 MONITORED PARAMETERS AND FREQUENCY

Outfalls discharging to flowing water bodies will be monitored for all required constituents during three storm events per year concurrently with receiving water monitoring, with the exception of toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a toxicity identification evaluation (TIE) on the observed receiving water toxicity test was inconclusive. The requirements for monitored constituents at each outfall are outlined in the MRP (Part VIII.B.1.c). Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will not be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. Parameters and frequency of stormwater monitoring are presented in **Table 4-6**.

Table 4-6.
Summary of MS4 Permit Required Stormwater Outfall Monitoring Parameters

Constituent	Annual Frequency (number of wet events per year)		
	Big Dalton Wash HUC-12 Site	Upper San Jose Creek HUC-12 Site	Upper Chino Creek HUC-12 Site
	San Dimas Wash	Thompson Creek	Chino Creek
Flow and field parameters(1)	3	3	3
Pollutants identified in Table E-2 of the MRP	(2)	(2)	(2)
TSS and Hardness	3	3	3
Alkalinity	3	3	
Ammonia	3	3	
TKN or Organic N	3		
Nitrate+Nitrite	3		
Orthophosphate	3		
Total Phosphorus	3		
Total Mercury	3		
Methylmercury	3		
TOC	3		
Total and Dissolved Copper	3	3	3
Total and Dissolved Lead	3	3	3
Total and Dissolved Zinc	3	3	3
Selenium		3	
E. coli	3	3	3
Cyanide		3	
PAH(3)		3	

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity, and TSS. The Permit lists Hardness as a field parameter, however, it is included as a laboratory measurement for consistency with receiving water.

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2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will not be conducted (i.e., monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will be conducted at the frequency specified in the MRP (i.e., monitoring frequency will become 3).

3 PAHs are defined as benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

4.4 STORMWATER OUTFALL MONITORING SUMMARY

A summary of how the stormwater outfall monitoring program meets the intended objectives of the stormwater outfall monitoring program outlined in Part VIII.A of the MRP is presented in **Table 4-7**.

Table 4-7.
Summary of Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of MS4 Permit.	○ Stormwater outfall monitoring sites chosen using a representative land use approach for HUC-12s. ○ Extensive list of constituents being collectively monitored at stormwater outfall monitoring sites.
Determine whether a Permittee's discharge is in compliance with applicable WQBELs derived from TMDL WLAs.	○ Stormwater outfall monitoring sites located in water bodies with applicable WQBELs. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the water quality priorities which includes constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ Stormwater outfall monitoring sites chosen to be representative of each HUC-12. ○ Monitoring frequency equal to receiving water monitoring frequency to enable determination of whether the Permittee's discharge is causing or contributing to any observed exceedances of water quality objectives in the receiving water. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.

5 Non-Stormwater Outfall Screening and Monitoring Program

Objectives of the non-stormwater outfall monitoring include:

- Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs.
- Determine whether a discharge exceeds non-stormwater action levels.
- Determine whether a discharge contributes to or causes an exceedance of receiving water limitations.
- Assist in identifying illicit discharges.

Additionally, the outfall screening and monitoring process is intended to prioritize outfalls for assessment and, where appropriate, scheduling of BMPs to address the non-stormwater flows.

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges to receiving waters from major outfalls. The Permit defines a “major outfall” to be a MS4 outfall that discharges from a single pipe with an inside diameter of at least 36 inches, or a MS4 outfall greater than 12 inches in diameter that receives water from 2 acres of land zoned for industrial activity. The program fills two roles; the first is to provide monitoring of whether the non-stormwater constituent load is adversely impacting the receiving water and the second is to assess whether the non-stormwater discharge is allowable. The non-stormwater outfall program is designed to be complimentary to the Illicit Connection/Illicit Discharge (IC/ID) MCM.

Additionally, the outfall screening and monitoring process is intended to meet the following objectives (Part IX.A of the MRP):

1. Develop criteria or other means to ensure that all outfalls with significant non-stormwater discharges are identified and assessed during the term of the Permit.
2. For outfalls determined to have significant non-stormwater flow, determine whether flows are the result of IC/IDs, authorized or conditionally exempt non-stormwater flows, natural flows, or from unknown sources.
3. Refer information related to identified IC/IDs to the IC/ID Elimination Program (Part VI.D.10 of the Permit) for appropriate action.
4. Based on existing screening or monitoring data or other institutional knowledge, assess the impact of non-stormwater discharges (other than identified IC/IDs) on the receiving water.
5. Prioritize monitoring of outfalls considering the potential threat to the receiving water and applicable TMDL compliance schedules.

6. Conduct monitoring or assess existing monitoring data to determine the impact of non-stormwater discharges on the receiving water.
7. Conduct monitoring or other investigations to identify the source of pollutants in non-stormwater discharges.
8. Use results of the screening process to evaluate the conditionally exempt non-stormwater discharges identified in Parts III.A.2 and III.A.3 of the Permit and take appropriate actions pursuant to Part III.A.4.d of the Permit for those discharges that have been found to be a source of pollutants. Any future reclassification shall occur per the conditions in Parts III.A.2 or III.A.6 of the Permit.
9. Maximize the use of resources by integrating the screening and monitoring process into existing or planned IMP and/or CIMP efforts.

In summary, the intent of the non-stormwater outfall program is to demonstrate that the Group Members are effectively prohibiting non-exempt or conditionally non-exempt discharges to receiving waters and to assess whether non-stormwater discharges are causing or contributing to exceedances of RWLs. By detecting, identifying, and eliminating illicit discharges, the program will demonstrate efforts by the ESGV Group to effectively prohibit non-stormwater discharges to and from the MS4. Where the discharges are deemed "significant", the program will discern whether they are illicit, exempt, or conditionally exempt. Following the program procedures will allow determination of whether the discharges may be causing or contributing to exceedances of RWLs.

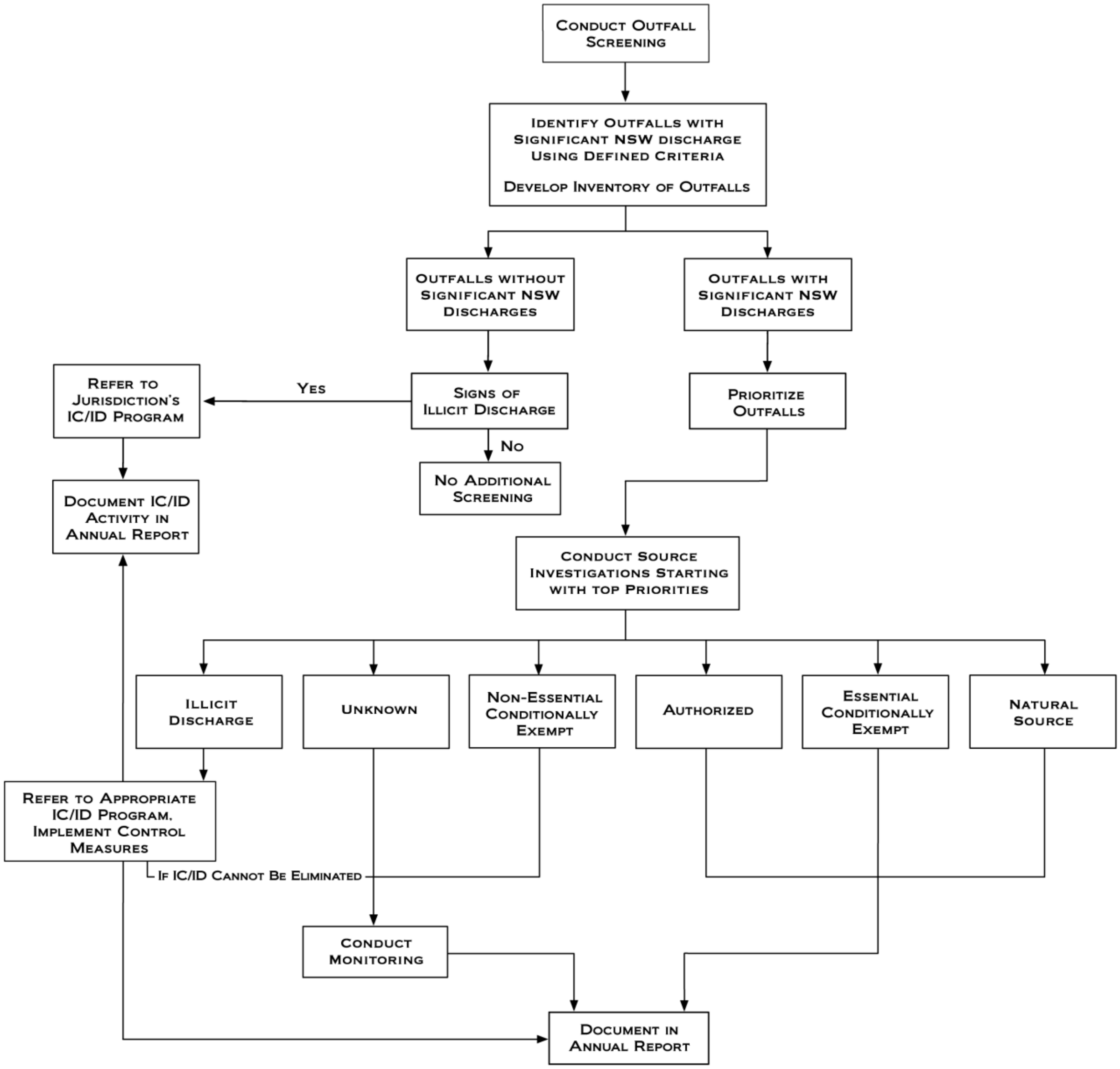
5.1 NON-STORMWATER OUTFALL SCREENING AND MONITORING PROGRAM

The Permit specifies a process for screening, investigating, and ultimately monitoring of outfalls with non-stormwater discharges. For the receiving water and stormwater monitoring programs, sufficient information is available, including guidance from the MRP, to support the identification of sites and begin the process of initiating water quality monitoring upon approval of this CIMP. For the non-stormwater outfall program, the MRP specifies a process for screening, investigating, and ultimately monitoring. The outfall screening and investigations must be completed prior to initiating monitoring at an individual outfall. A summary of the approach to address the required elements of the non-stormwater outfall program is presented in **Table 5-1**. A flowchart of the program is presented as **Figure 5-1**. Detailed discussion of each element is provided in the following subsections.

Table 5-1.
Non-Stormwater Outfall Screening and Monitoring Program Summary

Element	Description	Implementation Dates
Outfall screening	Implement a screening process to determine which outfalls exhibit significant discharges and those that do not require further investigation.	The screening process will begin summer 2014.
Identify outfalls with significant discharge	Based on data collected during the Outfall Screening process, identify MS4 outfalls with significant discharges.	
Inventory outfalls with discharge	Develop an inventory of major MS4 outfalls with known significant discharges and those requiring no further assessment.	
Prioritize source investigation	Use the data collected during the screening process to prioritize outfalls for source investigations.	
Identify sources of significant discharges	For outfalls exhibiting significant discharges, perform source investigations per the prioritization completed in the previous element.	Source investigations will be conducted for at least 25% of the outfalls with significant discharges by the end of December 28, 2015 and 100% by December 28, 2017.
Monitor discharges exceeding criteria	Using the information collected during screening and source investigation efforts, monitor outfalls that have been determined to convey significant discharges comprised of either unknown or non-essential conditionally exempt discharges, or continuing discharges attributed to illicit discharges are monitored.	First regularly scheduled dry weather monitoring event after the source investigation or after the CIMP has been approved by the Executive Officer, whichever is later.

Figure 5-1.
Non-Stormwater Outfall Screen and Monitoring Program Flow Diagram



5.2 IDENTIFICATION OF OUTFALLS WITH SIGNIFICANT NON-STORMWATER DISCHARGES

Based on a review of the information provided by the ESGV Group, the data necessary to identify significant non-stormwater discharges was not available. Thus, outfall screening will be initiated summer 2014 to collect the information to identify major outfalls exhibiting significant non-stormwater discharges and to develop the information needed for the inventory of outfalls with significant non-stormwater discharges. To help assess seasonality, additional screening will occur in late winter/early spring 2015, and late spring/early summer 2015. Screenings must be completed by early summer 2015 to allow sufficient time to determine which outfalls are significant and perform the assessments by the permit schedule. There are only three screening events planed. The MRP (Part IX.C.1) states that one or more of the following characteristics may determine significant non-stormwater discharges:

- Discharges from major outfalls subject to dry weather TMDLs.
- Discharges for which monitoring data exceeds non-stormwater action levels (NALs).
- Discharges that have caused or have the potential to cause may cause overtopping of downstream diversions.
- Discharges exceeding a proposed threshold discharge rate as determined by the Group Members.
- Persistence of flow.
- Discharges with higher flow rates.
- Larger outfall diameters.
- Discharges with odor, color, or cloudiness.
- Discharges into receiving waters with flows at the point of discharge.

To collect data for determining the significant non-stormwater outfalls, the ESGV Group will perform three dry-weather screenings. The initial screening provides the dual purpose of data collection for completing the outfall database and initial evaluation of outfalls. Each outfall in the EMWP area will be visited during the first screening. If no flow is observed for a particular outfall on both the first and second screenings, it would not be visited on the third event. A standard form will be used to collect characteristic data, consisting of:

- Receiving water channel bottom.
- Presence of water in channel.
- Visual estimate of discharge flow rate as follows:
  a. No flow,
  b. Trickle,
  c. Low flow (like from a garden hose), or
  d. High flow (like from a fire hose)
- Whether discharge ponds in the channel or reaches a flowing receiving water.
- Clarity.
- Presence of odors or foam.

Data collected through the screening process are the characteristics that will be utilized to determine which outfalls should be targeted for the next steps in the non-stormwater outfall program. The characteristics utilized will support a focus on discharges that have, or the potential to have, an impact on receiving waters. The receiving waters within the ESGV WMP area discharge to various downstream water bodies. The components of the outfall screening process are presented in **Table 5-2**.

The determination of significance will be made after the three screenings have been completed and the characteristics have been reviewed. Significant outfalls are persistent, so outfalls found to be flowing on only one event will be removed from consideration. Additionally, outfalls where the estimated flow was high on two or more screenings will be considered significant. Outfalls where turbid waters, or odors or foam were observed on two or more screenings will be referred to the jurisdiction's ICID program.

Table 5-2.
Approach for Establishing a Non-Stormwater Outfall Screening Process

Component	Description
Data Collection	Data include qualitative flow size, channel bottom, ponding of discharge, clarity, color, and odor. Any additional information needed to complete the inventory will be collected. Land use and permitted dischargers will be considered in the evaluation with field data to determine significant non-stormwater discharge.
Frequency	Three field screening events per outfall will be conducted. Visual information will be collected on all flowing drains greater than 12 inches in diameter.
Defining Significant Discharges	Will be determined after screening events are completed. Visual information from the screening, such as flow size persistent flow, flow condition in receiving water, may be considered to determine significant discharges. Land use information or SIC codes may also be considered to include only drains 12 to 36 inches in diameter from areas with industrial drainage.
Timeline	The non-stormwater outfall screening process will begin in the summer of 2014. Additional screenings will occur in winter 2014-2015 and late-Spring/early Summer 2015.

5.3 INVENTORY OF MS4 OUTFALLS WITH NON-STORMWATER DISCHARGES

An inventory of MS4 outfalls must be developed to identify those outfalls with dry weather discharge. The inventory is split into two major categories, those with known significant non-stormwater discharges, and those requiring no further assessment (Part IX.D of the MRP). If the MS4 outfall requires no further assessment, the inventory must include the rationale for the determination of no further action required. Rationale for a determination of no future action would be expected to include 1) the outfall does not have persistent flow; 2) the outfall does not have a significant non-stormwater discharge; or 3) discharges observed were determined to be exempt. The inventory would be included in a database generated by the ESGV Group as required by the MRP. Each year, the inventory must be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharges.

The following physical attributes of outfalls with significant non-stormwater discharges must be included in the inventory and is being collected as part of the screening process:

- Date and time of last visual observation or inspection.
- Outfall alpha-numeric identifier.
- Description of outfall structure including size (e.g., diameter and shape.)
- Description of receiving water at the point of discharge (e.g., natural, soft-bottom with armored sides, trapezoidal, concrete channel.)
- Latitude/longitude coordinates.
- Nearest street address.
- Parking, access, and safety considerations.
- Photographs of outfall condition.
- Photographs of significant non-stormwater discharge or indicators of discharge unless safety considerations preclude obtaining photographs.
- Estimation of discharge rate.
- All diversions either upstream or downstream of the outfall.
- Observations regarding discharge characteristics such as turbidity, odor, color, presence of debris, floatables, or characteristics that could aid in pollutant source identification.
- Flow condition in the receiving water at the point of discharge (dry, ponding, flowing, or tidal influence.)

5.4 PRIORITIZED SOURCE IDENTIFICATION

Once the major outfalls exhibiting significant non-stormwater discharges have been identified through the screening process and incorporated in the inventory, Part IX.E of the MRP requires that the ESGV Group prioritize the outfalls for further source investigations. The MRP identifies the following prioritization criteria for outfalls with significant non-stormwater discharges:

- Outfalls discharging directly to receiving waters with WQBELs or RWLs in the TMDL provisions for which final compliance deadlines have passed.
- All major outfalls and other outfalls that discharge to a receiving water subject to a TMDL shall be prioritized according to TMDL compliance schedules.
- Outfalls for which monitoring data exist and indicate recurring exceedances of one or more of the non-stormwater action levels (NALs) identified in Attachment G of the Permit.
- All other major outfalls identified to have significant non-stormwater discharges.

Data collected during the three screenings may be used to refine the determination of significance. Once the prioritization is complete, a source identification schedule will be developed. The scheduling will focus on the outfalls with the highest pollutant of concern loading rates first. Unless the results of the field screening justify a modification to the schedule in the MRP, the schedule will ensure that source investigations are completed on no less than 25% of the outfalls with significant non-stormwater discharges by December 28, 2015 and 100% by December 28, 2017.

5.5 SIGNIFICANT NON-STORMWATER DISCHARGE SOURCE IDENTIFICATION

The screening and source identification component of the program is used to identify the source(s) and point(s) of origin of the non-stormwater discharge. Based on the prioritized list of major outfalls with significant non-stormwater discharges, investigations will be conducted to identify the source(s) or potential source(s) of non-stormwater flows.

Source investigations will be conducted using site-specific procedures based on the characteristics of the non-stormwater discharge. Investigations could include:

- Gathering field measurements to characterize the discharge.
- Following dry weather flows from the location where they are first observed in an upstream direction along the conveyance system.
- Compiling and reviewing available resources including past monitoring and investigation data, land use/MS4 maps, aerial photography, and property ownership information.

Part IX.A.2 of the MRP requires the source investigation results be classified into one of four endpoints outlined as follows and summarized in **Table 5-3**:

A. IC/IDs: If the source is determined to be an illicit discharge, the procedures to eliminate the discharge consistent with IC/ID requirements must be implemented and document actions.
B. Authorized or conditionally exempt non-stormwater discharges: If the source is determined to be an NPDES permitted discharge, a discharge subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or a conditionally exempt essential discharge, the Group Members must document the source. For non-essential conditionally exempt discharges, the Group Members must conduct monitoring consistent with Part IX.G of the MRP to determine whether the discharge should remain conditionally exempt or be prohibited.
C. Natural flows: If the source is determined to be natural flows, the Group Members must document the source.
D. Unknown sources: The Group Members must conduct monitoring consistent with the MRP if a source is unknown.

Table 5-3.
Summary of Endpoints for Source Identification

Endpoint	Follow-up	Action Required by Permit
A. Illicit Discharge or Connection	Refer to IC/ID program	Implement control measures and report in annual report. Monitor if cannot be eliminated.
B. Authorized or Conditionally Exempt Discharges(1)	Document and identify if essential or non-essential	Monitor non-essential discharges
C. Natural Flows	End investigation	Document and report in annual report
D. Unknown	Refer to IC/ID program	Monitor

1 Discharges authorized by a separate NPDES permit, a discharge subject to a Record of Decision approved by USEPA pursuant to section 121 of CERCLA, or is a conditionally exempt non-stormwater discharge addressed by other requirements. Conditionally exempt non-stormwater discharge addressed by other requirements are described in detail in Part III.A. Prohibitions – Non-Stormwater Discharges of the Permit.

Where investigations determine the non-stormwater source to be authorized, natural, or essential conditionally exempt flows, the ESGV Group will conclude the investigation and move to the next highest priority outfall for investigation. Where investigations determine that the source of the discharge is non-essential conditionally exempt, an illicit discharge, or is unknown – further investigation may be conducted to eliminate the discharge or demonstrate that it is not causing or contributing to receiving water problems. In some cases, source investigations may ultimately lead to prioritized programmatic or structural BMPs. Where Group Members determine that they will address the non-stormwater discharge through modifications to programs or by structural BMP implementation, the ESGV Group will incorporate the approach into the implementation schedule developed for the WMP and the outfall can be lowered in priority for investigation, such that the next highest priority outfall may be addressed.

5.6 NON-STORMWATER DISCHARGE MONITORING

As outlined in the MRP, outfalls with significant non-stormwater discharges that remain unaddressed after source investigation shall be monitored to meet the following objectives:

A. Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs;
B. Determine the quality of a discharge exceeds non-stormwater action levels, as described in Attachment G of the Permit; and
C. Determine whether a discharge causes or contributes to an exceedance of receiving water limitations.

As identified in **Table 5-3**, outfalls that have been determined to convey significant non-stormwater discharges where the source investigations concluded that the source is attributable to a continued illicit discharge (Endpoint A), non-essential conditionally exempt (Endpoint B), or unknown (Endpoint D) must be monitored. Monitoring will begin at the first regularly scheduled dry weather event after completing a source investigation.

5.6.1 Non-Stormwater Outfall-Based Monitoring Sites

The outfall screening and prioritization approach will result in an inventory of outfalls. Where required, the non-stormwater discharge will be monitored per the Permit requirements. The monitoring is described in the following section.

5.6.2 Monitored Parameters and Frequency of Monitoring

The requirements for constituents to be monitored are outlined in the Part VIII.G.1.a-e of the MRP. Outfalls will be monitored for all required constituents except toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a Toxicity Identification Evaluation (TIE) on the observed receiving water toxicity test was inconclusive. Additionally, parameters in **Attachment C** will not be able to be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. A list of parameters applicable to non-stormwater outfall monitoring, based on which receiving water the discharge is to, is presented in **Table 5-4**. Also, constituents associated with suspended sediments transported during wet weather (i.e., PCBs, DDTs, dieldrin, and chlordane) will not be monitored during non-stormwater outfall monitoring.

Table 5-4.
Summary of Non-Stormwater Outfall Monitoring Parameters

Constituent	Subwatershed Annual Frequency (Dry events per year)							
	San Dimas Wash	Walnut Creek Wash	Puddingstone Channel	Marshall Creek	Live Oak Wash	San Jose Creek	Chino Creek	San Antonio Creek
Flow and field parameters[1]	2	2	2	2	2	2	2	2
Pollutants identified in Table E-2 of the MRP	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Hardness and TSS	2	2	2	2	2	2	2	2
Alkalinity		2	2	2	2	2		
Ammonia		2	2	2	2	2		
Total Mercury		2	2	2	2			
Total and Dissolved Copper	2	2	2	2	2	2	2	2
Total and Dissolved Lead	2	2	2	2	2	2	2	2
Total and Dissolved Zinc	2	2	2	2	2	2	2	2
Selenium						2		
E. coli	2	2	2	2	2	2	2	2
Cyanide						2		
PAHs[3]						2		
TDS	2	2	2	2	2	2		
Sulfate	2	2	2	2	2	2		
Chloride	2	2	2	2	2	2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity. Hardness is specified as a field measurement in the Permit, however to be consistent with the receiving water, it will be measured in the laboratory.

2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, non-stormwater outfall monitoring will not be conducted (i.e., the monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, Non-stormwater outfall monitoring will become 2.

3 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

The MRP specifies the monitoring frequency for non-stormwater outfall monitoring as the following:

- For outfalls subject to a dry weather TMDL, the monitoring frequency shall be per the approved TMDL monitoring plan or as otherwise specified in the TMDL or as specified in an approved CIMP.
- For outfalls not subject to dry weather TMDLs, approximately quarterly for first year.
- Monitoring can be eliminated or reduced to twice per year, beginning in the second year of monitoring if pollutant concentrations measured during the first year do not exceed WQBELs, NALs or water quality standards for pollutants identified on the 303(d) List.

The non-stormwater outfall monitoring events will be coordinated with the dry weather receiving water monitoring events to allow for an evaluation of whether the non-stormwater discharges are causing or contributing to an observed exceedance of water quality objectives in the receiving water. While a monitoring frequency of four times per year is specified in the Permit, it is inconsistent with the dry weather receiving water monitoring requirements. The receiving water monitoring requires two dry weather monitoring events per year. Therefore, non-stormwater outfall monitoring events will be conducted twice per year.

A summary of how the non-stormwater outfall monitoring program meets the intended objectives of the non-stormwater outfall monitoring program outlined in Part II.E.3 of the MRP is presented in **Table 5-5**.

5.6.3 Adaptive Monitoring

Monitoring for non-stormwater discharges will be more dynamic than either the receiving water or stormwater outfall monitoring. As non-stormwater discharges are addressed, monitoring at the outfall will cease. Additionally, if monitoring demonstrates that discharges do not exceed any WQBELs, non-NALs, or water quality standards for pollutants identified on the 303(d) list, monitoring will cease at an outfall after the first year. The process of updating the CIMP per the monitoring results is presented in **Section 10**. Thus, the number and location of outfalls monitored has the potential to change on an annual basis.

Table 5-5.
Summary of Non-Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether a Permittee's discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs	○ List of constituents based on the water quality priorities which incorporate constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge exceeds non-stormwater action levels, as described in Attachment G of the MS4 Permit.	○ Extensive list of constituents being collectively monitored at non-stormwater outfall monitoring sites.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.
Assist a Permittee in identifying illicit discharges as described in Part VI.D.10 of the MS4 Permit.	○ Non-stormwater outfall program is designed to be complimentary to IC/ID program. ○ Non-stormwater outfall program provides a mechanism for the detection, identification, and elimination of illicit discharges. ○ Where non-stormwater discharges are deemed "significant", the non-stormwater outfall program will discern whether the discharges are illicit, exempt, or conditionally exempt. ○ If the source identification component of the non-stormwater outfall program determines a discharge to be an illicit discharge, the discharge will be referred to the IC/ID program.

6 New Development/Re-Development Effectiveness Tracking

6.1 PROGRAM OBJECTIVES

Group Members have developed mechanisms for tracking information related to new and redevelopment projects that are subject to post-construction BMP requirements in Part VI.D.7 of the Permit. The specific data to be tracked listed in Part X.A of the MRP are listed in **Table 6-1**. The data will be used to assess the effectiveness of the low-impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction.

Table 6-1.
Required Data to Track for New and Redevelopment Projects per Attachment E.X.A

New Development and Redevelopment Data per Attachment E.X.A	
✓ Name of the Project	✓ Project design storm volume (gallons or million gallons per day (MGD))
✓ Name of the Developer	✓ Percent of design storm volume to be retained onsite
✓ Project location and map(1)	✓ Design volume for water quality mitigation treatment BMPs (if any)
✓ Documentation of issuance of requirements to the developer	✓ One year, one hour storm intensity(2) (if flow through treatment BMPs are approved)
✓ 85th percentile storm event for the project design (inches per 24 hours)	✓ Percent of design storm volume to be infiltrated at an offsite mitigation or groundwater replenishment site
✓ 95th percentile storm event for projects draining to natural water bodies (inches per 24 hours)	✓ Percent of design storm volume to be retained or treated with biofiltration at an offsite retrofit project
✓ Other design criteria required to meet hydromodification requirements for drainages to natural water bodies	✓ Location and maps of offsite mitigation, groundwater replenishment, or retrofit sites1
✓ Project design storm (inches per 24 hours)	✓ Date of Certificate of Occupancy

1 Preferably linked to the GIS Storm Drain Map

2 As depicted on the most recently issued isohyetal map published by the Los Angeles County hydrologist

6.2 EXISTING NEW DEVELOPMENT/RE-DEVELOPMENT TRACKING PROCEDURES

The Standard Urban Stormwater Mitigation Program (SUSMP) requirements implemented under the previous MS4 Permit (Order R4-01-182) laid the foundation for the MCMs contained in Part VI.D.7 of the current Permit. With implementation of the SUSMP, Permittees required post construction BMPs on applicable projects, developed standard requirements for project submittals, and began to track related data. The Group Members will build on the existing procedures for land development to ensure that all required project data is captured.

Internal procedures and data protocols that clearly define departmental roles and responsibilities pertaining to data collection, data management, and tracking will be utilized. These procedures will include points in the process where data are generated and tracked, who is responsible for tracking the data, and how the data will be managed. Data management protocols and internal procedures, will also consider the land development data tracking requirements contained in Part VI.D.7.d.iv.(1)(a). These requirements are distinct from those listed in the MRP but will be addressed similarly. Data requirements under Part VI.D are contained in **Table 6-2**.

Table 6-2.
Required Data to Track for New and Redevelopment Projects per Part VI.D.7.d.iv.(1)(a)

✓ Municipal Project ID	✓ Maintenance Records
✓ State Waste Discharge Identification Number	✓ Inspection Date(s)
✓ Project Acreage	✓ Inspection Summary(ies)
✓ BMP Type and Description	✓ Corrective Action(s)
✓ BMP Location (coordinates)	✓ Date Certificate of Occupancy Issued
✓ Date of Acceptance	✓ Replacement or Repair Date
✓ Date of Maintenance Agreement	

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7 Regional Studies

One regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The SMC is a collaborative effort between all of the Phase I MS4 NPDES Permittees and NPDES regulatory agencies in Southern California. The Southern California Coastal Water Research Project (SCCWRP) oversees the SMC.

On behalf of Group Members, the LACFCD will continue to provide full financial and/or monitoring resources to the SMC regional watershed monitoring program, also known as the Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program (Bioassessment Program). The Bioassessment Program was initiated in 2009 and is structured to occur in cycles of five years. Sampling under the first cycle concluded in 2013. The next five-year cycle is scheduled to begin in 2015, with additional special study monitoring scheduled to occur in 2014.

8 Non-Direct Measurements

Water quality data collected through other monitoring programs (e.g., WRPs receiving water monitoring) in the watershed will be evaluated to the extent practicable. The extent practicable will be dictated by the cost of gathering and compiling information from outside programs. It is not the intent or purpose of the CIMP to compile and analyze all available data. Data reported by these entities will be evaluated for suitability for inclusion in the CIMP database. If the data are deemed to be suitable they will be included in the ESGV CIMP database. Data from other programs will be used to supplement land use data to evaluate loading to the receiving water as well as to evaluate receiving water quality. Environmental data reported by other entities will be evaluated for suitability for inclusion in this CIMP database and will be accepted if it meets the following requirements:

- Conducted and documented consistent with the sampling procedures outlined in this CIMP.
- Sampling collection is performed and documented by a competent party consistent with applicable guidance and this CIMP.
- Sample analysis is conducted using approved analytical method by a certified analytical laboratory.

Receiving water monitoring sites were selected to allow coordination between this CIMP and LACSD receiving water monitoring programs. Currently, the San Gabriel River estuary site, R-8, will be used for dry weather Harbors Toxics TMDL monitoring requirements. If additional sites are moved to be coincident with the Water Reclamation Plant program, environmental data collected by the Water Reclamation Plants may be directly used in place of the monitoring described in this CIMP.

Due to the absence of previously collected monitoring results, an understanding has not been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 may be causing or contributing to the impairments identified in the Harbor Toxics TMDL. As such, to gain a clear understanding, environmental data representative of the entire San Gabriel River WMA will be collected downstream of the ESGV WMP area and directly used for suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. The downstream Lower San Gabriel River (LSGR) EWMP Group conducting monitoring in San Gabriel Reach 1 will conduct wet weather suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. After a better understanding has been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 are causing or contributing to the impairments identified in the Harbor Toxics TMDL, the Group Members may elect to also conduct suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL at the receiving water LTA sites.

Non-direct measurements of flow and rainfall information will be obtained from the LACFCD as described in **Attachment D**.

9 Monitoring Procedures

A general outline of the monitoring procedures is presented in this section. Detailed discussion of the procedures is included in **Attachment D**.

9.1 MONITORING PROCEDURES

Monitoring will occur during dry and wet conditions. Wet weather conditions for triggering storm events will be defined as a 70 percent probable forecast of greater than 0.25 inches of precipitation of rain where the preceding 72 hours of dry weather has less than 0.1 inches of rain. The Metals TMDL operationally defines wet-weather where flow at the USGS gage station 11085000 is equal or greater than 260 cfs. Compliance with wet-weather metals allocations will be determined from loading estimates where flows at USGS gage 1108500 are measured greater than 260 cfs. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow. As noted in the Metals TMDL, the 90^{th} percentile flow measured at S14 is 1 cfs, dry weather conditions are operationally defined as where flow measured at the S14 station is less than 1 cfs. In the case of an estuary, dry weather is defined as days with less than 0.1 inches of rain and days more than three days after a rain event of 0.1 inches or greater within the watershed, as measured from at least 50 percent of LACDPW controlled rain gauges within the watershed.

Note that if rainfall begins after dry weather monitoring has been initiated then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events as the composition of the receiving water will change less over time; and thus, the grab samples sufficiently characterize the receiving water. Additionally, grab samples for dry weather are consistent with similar programs throughout the region.

Composite samples will be used for wet weather sampling events to sufficiently characterize the receiving water during wet weather. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli; oil and grease), conditions are considered unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (auto-sampler) may not be warranted. Additionally, if auto-samplers fail during a rain event, or if the rain event is such that composite samples cannot be collected (e.g., very short in duration or volume), grab samples will be collected and submitted for analysis for all analytes. For dry weather toxicity monitoring, the sampling event must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry weather monitoring event will take place during January unless sampling during another month is deemed to be necessary or preferable.

All reasonable efforts will be made to monitor the first significant rain event of the storm year (first flush). The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Jose Creek and San Dimas Wash over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect some or all samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

Additional information to support evaluating weather conditions, collecting grab and composite samples, and targeting wet weather sampling events is provided in **Attachment D**.

9.2 ADAPTIVE MONITORING TRIGGER

Monitoring of a specific constituent will be eliminated if:

- For a water body pollutant combination (WBPC) covered in a TMDL, no exceedances are observed over a five-year period.
- For a WBPC on the 303(d) list, data collected are sufficient to support delisting per State policy.
- WBPC being monitored due to downstream 303(d) listings, two years of monitoring of no exceedances are observed for the same condition as the listing (i.e., wet or dry weather).
- Category 3C WBPCs having no exceedances over two years.

Category 3A WBPCs will be moved to Category 3C if there are two years of no observed exceedances. Additionally, monitoring for a constituent at the TMDL receiving water sites may be triggered in the future if two consecutive exceedances during the same condition (i.e., wet or dry weather) are observed at the LTA site. If a TMDL receiving water site has observed two consecutive exceedances during the same condition, the constituent will be added to the nearest upstream stormwater outfall or significant non-stormwater outfall site for wet or dry weather, respectively. Monitoring would be initiated at upstream receiving water monitoring sites during subsequent events until the elimination of the WBPC described above are triggered.

The monitoring data will be reviewed annually to determine if constituent lists for monitoring sites require updating. When additions or removals are triggered, the changes will become effective for the subsequent monitoring season and reported in the annual report.

9.3 AQUATIC TOXICITY TESTING

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. The following outlines the approach for conducting aquatic toxicity monitoring and evaluating results. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP. As *C. dubia* is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, *C. dubia* is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool.

Per the MRP, acute and chronic toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010).

For acute and chronic *C. dubia* toxicity testing, if a statistically significant 50% difference in mortality is observed between the sample and laboratory control, a TIE will be performed. If a statistically significant 50% difference in a sub-lethal endpoint is observed between the sample and laboratory control, a confirmatory sample will be collected from the receiving water within two weeks of obtaining the results of the initial sample. If a statistically significant 50% difference in mortality or sub-lethal endpoint is observed between the sample and laboratory control on the confirmatory sample, a TIE will be performed.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE positive control "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity.

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s). The Group Members will prepare a discharge assessment plan if TIEs conducted on consecutive sampling events are inconclusive. Discharge assessments will be conducted after consecutive inconclusive TIEs, rather than after one, because of the inherit variability associated with the toxicity and TIE testing methods.

Monitoring for constituents identified based on the results of a TIE will occur as soon as feasible following the completion of a successful TIE (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a successful TIE).

The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

9.4 SUSPENDED SEDIMENT SAMPLING

Most of the organochlorine (OC) pesticides and PCBs tend to strongly associate with sediment and organic material. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors. Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in the County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events.

Where analyses for storm borne sediment are required, the HRMS method will be used to quantify the constituents. Details of the method are presented in **Attachment D**.

10 Adaptive Management

The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. As noted in this CIMP, several monitoring elements are dynamic that will require modifications to the monitoring sites, schedule, frequency or parameters. In particular, the non-stormwater screening program and the toxicity monitoring will likely generate changes that need to be incorporated. This section lays out a range of possible modifications to this CIMP and the process for CIMP revision and update.

10.1 INTEGRATED MONITORING AND ASSESSMENT PROGRAM

Monitoring is based on water quality issues identified in downstream water bodies. As data are collected and currently identified constituents prove to not be an issue in the ESGV WMP area water bodies, they will be removed from the monitoring program. Likewise, if new constituents are identified, they will be added to the ongoing monitoring program. Every year, an evaluation will be conducted to identify potential modifications resulting from the following:

- TIEs result in the identification of additional constituents that need to be monitored.
- Inconclusive TIEs result in additional receiving water toxicity monitoring.
- Additional upstream receiving water monitoring is necessary to characterize the spatial extent of RWL exceedances.
- Additional outfall monitoring is needed in response to RWL exceedances.
- Non-stormwater outfall sites will change as discharges are addressed.
- Monitoring data demonstrates that water quality objectives are not being exceeded in the receiving waters.
- Source investigations determine that MS4 discharges are not a source of a constituent.

The results from the monitoring are meant to tie into the WMP as feedback for the water quality changes resulting from control measures implemented by the Group Members. As a result, additional changes may be considered during the evaluation based on the control measure implementation needs.

10.2 CIMP REVISION PROCESS

A range of sampling specified in the CIMP may result in data that will require changes to ensure monitoring meets the requirements and intent of the MRP and supports WMP implementation. However, since many of those potential changes are identified in this CIMP, it should not be necessary to obtain Regional Board approval of modifications already considered in this CIMP to ensure timely implementation of appropriate modifications to monitoring. Changes identified in this section will be discussed in the annual report and implemented starting no later than the first CIMP monitoring event of the next monitoring year (i.e., October 1 of the year following the annual report submittal), consisting of:

1. Adding constituents at receiving water and/or outfall monitoring sites, increasing monitoring frequency, or adding sites as a result of requirements in the MRP (e.g., TIE results), procedures outlined in this CIMP or to further support meeting the monitoring objectives.
2. Discontinuing monitoring for Table E-2 constituents that are not identified as a water quality priority, i.e. not previously monitored, and are not detected at levels above relevant water quality objectives in the first year of monitoring.
3. Discontinuing monitoring of any Category 3 constituent at a specified site if there are two consecutive years of monitoring for the same condition (i.e., wet or dry weather) with no exceedances observed.
4. Modifying methods for consistency with USEPA method requirements or to achieve lower detection limits.
5. Changing analytical laboratories.
6. Relocating an outfall monitoring location determined to be not representative of MS4 discharges in the WMP area, for reasons other than the observed water quality, or because monitoring at the site is not feasible.
7. Implementing the changes associated with conducting at least one re-assessment of the Non-stormwater Outfall Program during the Permit term.
8. Modifications to sampling protocols resulting from coordination with other watershed monitoring programs. In particular, suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL will be conducted downstream of the WMP area. If consistent exceedances of interim WQBELs are observed and the MWP group determines that control measures will need to be implemented to meet the final WQBELs by March 23, 2032, the group will commence monitoring at the LTA site to assess the degree to which discharges from the WMP area are causing or contributing to those exceedances. After March 23, 2032, if there are two consecutive monitoring events with exceedances observed, the WMP Group will commence monitoring at the stormwater outfall monitoring sites to assess the degree to which discharges from each of the Group Members may be causing or contributing to those exceedances.

Should additional modifications be identified that are not specified in this section that would be major changes to the approach (e.g., moving or removing a stormwater outfall or receiving water location), the modifications will be proposed in the annual report and in a separate letter to the Regional Board Executive Officer for approval.

11 Reporting and Data Management

The following sections provide an overview of the monitoring and reporting the Group Members will follow. Details of the data management and reporting are included in **Attachment D**.

11.1 DOCUMENTS AND RECORDS

The ESGV Group shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the Permit, and records of all data used to completed the Report of Waste Discharge and application of the Permit, for a period of at least three years from the date of the sample, measurement, report, or application.

11.1.1 Event Summary Reports

Reports of monitoring activities will include, at a minimum, the following information:

- The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
- The individual(s) who performed the sampling or measurements.
- The date(s) analyses were performed.
- The individual(s) who performed the analyses.
- The analytical techniques or methods used.
- The results of such analyses.
- The data sheets showing toxicity test results.

11.1.2 Semi-Annual Analytical Data Reports

Results from each of the receiving water or outfall based monitoring station conducted in accordance with standard operating procedures shall be sent electronically to the Regional Board's stormwater site at MS4stormwaterRB4@waterboards.ca.gov. Analytical data reports are required to be submitted on a semi-annual basis and will include the following:

- Exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds.
- Corresponding sample dates and monitoring locations.

Semi-annual data reports will be submitted June 15 and December 15 of each year. The mid-year data reports will cover the monitoring period of July 1 through December 31. The December data report will cover January 1 through June 30.

11.2 MONITORING REPORTS

Annual monitoring reports will be submitted by December 15 of each year. The annual monitoring reports will cover the monitoring period of July 1 through June 30. The annual monitoring reports will include the following:

- Watershed summary information
- Watershed management area
- Subwatershed (HUC-12) descriptions
- Description of permittee(s) drainage area within the subwatershed
- Annual assessment and reporting
- Stormwater control measures
- Effectiveness assessment of stormwater control measures
- Non-stormwater water control measures
- Effectiveness assessment of non-stormwater control measures
- Integrated monitoring compliance report
- Adaptive management strategies
- Supporting data and information

Details on the reporting requirements from the MRP that will be submitted with the semi-annual analytical data reports and annual monitoring reports are presented in **Attachment D**. In addition to the requirements from the MRP, a discussion of how the reported data are to be used is included in **Attachment D**.

11.3 DATA MANAGEMENT

The acceptability of data is determined through data verification and data validation. In addition to the programmatic data quality objectives, the standard data validation procedures documented in the subcontracted laboratory's quality assurance (QA) manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory's QA officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Decisions to reject or qualify data will be made, based on the evaluation of field and laboratory quality control data. Data verification is the process of checking required methods and procedures have been followed at all stages of the data collection process, including: collection, receipt, preparation, and analysis of samples; and review of generated results for completeness. Data validation is the process to determine if project requirements are met, including: obtaining the documents and records produced during data verification and evaluating the quality of the data generated by the laboratory equipment to evaluate the acceptability of the analytical results as representative measures of the conditions in the original sample.

The field log and analytical data generated will be converted to a standard database format. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the database. Details of the data management protocols are provided in **Attachment D**.

12 Schedule for CIMP Implementation

The CIMP will become effective July 1, 2015, or 90 days after approval by the Executive Officer of the Regional Board whichever is later. However, new and redevelopment effectiveness tracking will begin no later than the date of Draft WMP submittal (June 28, 2014).

During the CIMP approval process all existing monitoring will continue. Within 90 days of CIMP approval, sample collection for all constituents at all dry and existing wet weather receiving water sites will commence. The remaining monitoring will be affected by the feasibility of collecting a sample within 90 days of CIMP approval. The two primary factors affecting the feasibility of sample collection upon approval of this CIMP relate to (1) auto-sampler installation and (2) monitoring that is dependent upon prerequisite information (e.g., monitoring of significant non-stormwater discharges).

The process for installing auto-samplers includes numerous tasks that require multiple agency coordination and permitting. Numerous auto-sampler stations have been installed throughout the County and provide significant experience in understanding the challenges and timelines for designing, permitting, and installing auto-sampler stations. The following provides an overview of the tasks and timelines associated with auto-sampler installation and what would be considered a relatively straightforward installation timeframe:

- Detailed auto-sampler site configuration/design, which includes data collection and review, identification of permit requirements, concept design, development of summary technical memos, and review by participating agencies and associated divisions: 12 months.
- Obtaining permits from one or more of the following entities: Army Corps of Engineers, LACFCD, United States Fish and Wildlife Service, California Department of Fish and Game, California Coastal Commission, and the Regional Board: 3 to 10 months.
- Purchase of equipment via contractor or via agency procurement process (can occur somewhat concurrently with permitting): 2 to 6 months.
- Connecting to power via an upgrade to existing service or establishing new service: 1 to 6 months.
- Construction of monitoring station assuming no bid/award process: 1 month.
- Total time: 18 to 30 months.

Phasing in the receiving water and stormwater outfall elements of this CIMP will allow evaluation of the sites to determine if any need to be changed due to significant contributions from non-MS4 sources or other reasons that sampling is not feasible at a site requiring an alternate or a new site.

Phase I of the CIMP Implementation:

- Fiscal Year 2014-2015.
- Non-stormwater screening.
- Dry weather monitoring at all locations (beginning July 1, 2015 or 90 days after CIMP approval; whichever is later.)

Phase II of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2015-2016.
- Determination of significant non-stormwater outfalls.
- Installation of LTA receiving water site.
- Installation of 2 TMDL receiving water sites.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase III of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2016-2017.
- Installation of 3 stormwater outfall sites.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase IV of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2017-2018.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing sites.
- Installation of optional TMDL receiving water site as necessary.

13 References

Regional Board, 2013. Final Staff Report for the Implementation Plans and Schedules for the Los Cerritos Channel and San Gabriel River Metals TMDLs.

Regional Board, 2011. Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters. Attachment A to Resolution No. R11-008. Adopted May 5, 2011. Effective March 23, 2012.

Regional Board, 2012. Water Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4s) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4. Order No. R4-2012-0175. NPDES No. CAS004001. December 6

USEPA, 2007. Total Maximum Daily Loads for Metals and Selenium – San Gabriel River and Impaired Tributaries. USEPA Region 9. March 26, 2007.

USEPA, 2012. Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs. USEPA Region 9. March 26, 2012.

Attachment A

Middle Santa Ana River Water Quality Monitoring Plan

City of Claremont:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Claremont.pdf

City of Pomona:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Pomona.pdf

Attachment B

Monitoring Location Fact Sheets

B-1 RECEIVING WATER SITES

B-1.1 Live Oak Wash Long Term Assessment Site

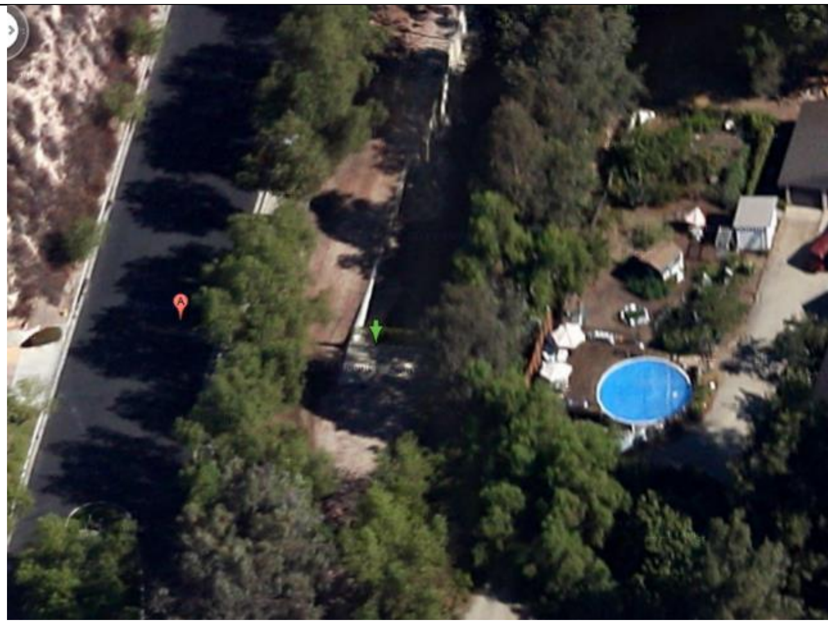
Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
Live Oak Wash	Tributary	ESGV_LOW_DS	N/A	LTA, TMDL	34.094064	-117.792934

General Description: LTA monitoring site located upstream of where Live Oak Wash discharges into Puddingstone Reservoir and downstream of the confluence of all major tributaries with Live Oak Wash. Because Live Oak Wash is a soft-bottomed channel and irregularly shaped at the location of the LTA monitoring site, flow will be measured upstream of the LTA monitoring site within Puddingstone Channel, Marshal Creek, and at Live Oak Wash upstream of the confluence of these tributaries.

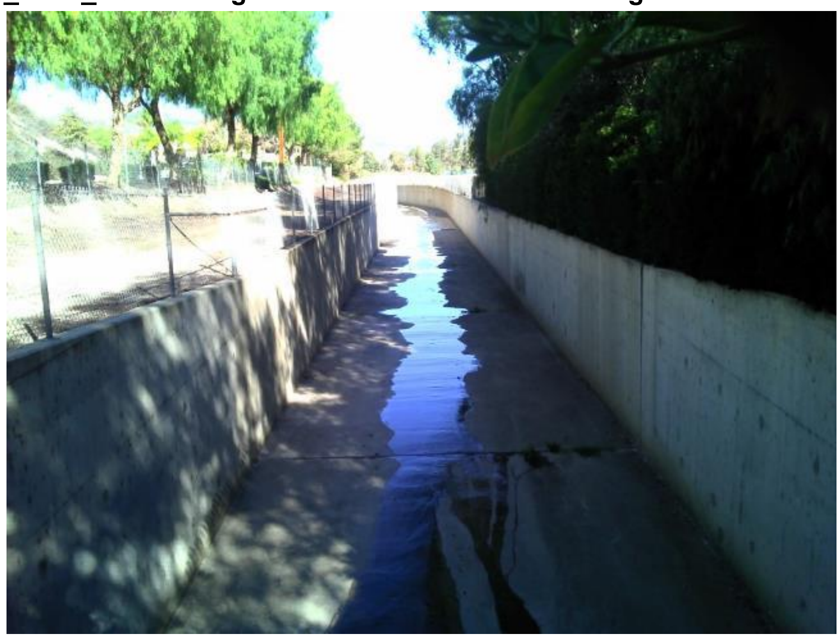
ESGV_LOW_DS Aerial View

ESGV_LOW_DS Looking Upstream

ESGV_LOW_DS Looking Downstream

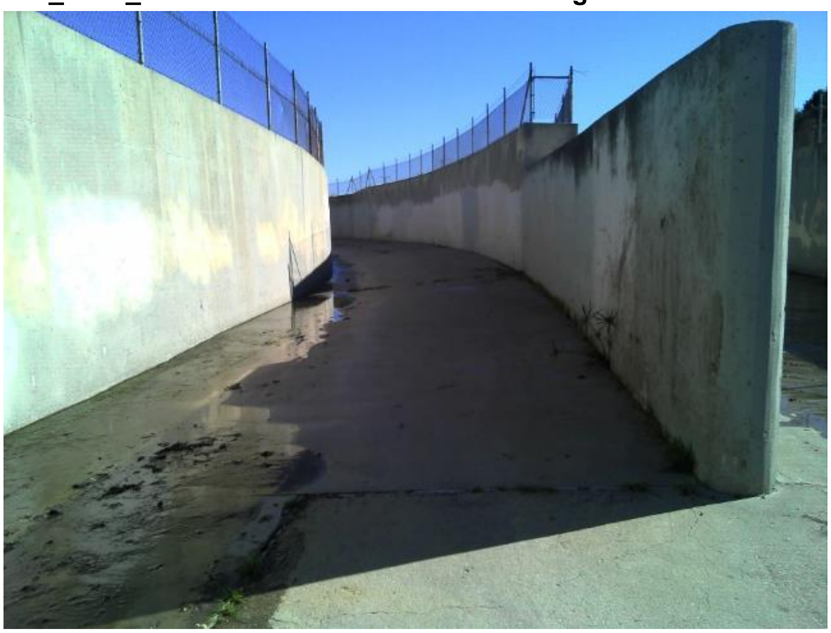


ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Aerial View



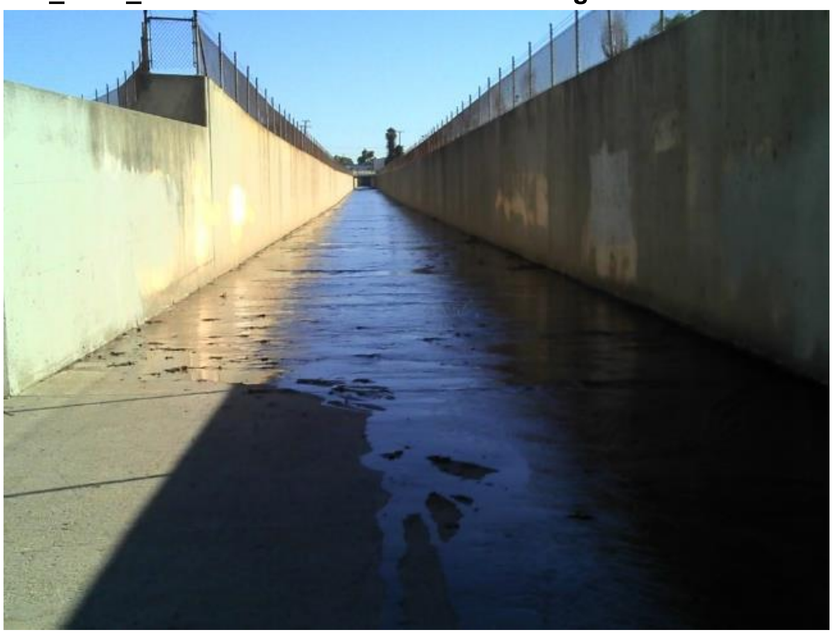
ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Looking Upstream

ESGV_LOW_DS Marshall Creek Flow Monitoring Location Aerial View



ESGV_LOW_DS Marshall Creek Flow Monitoring Location Looking Upstream

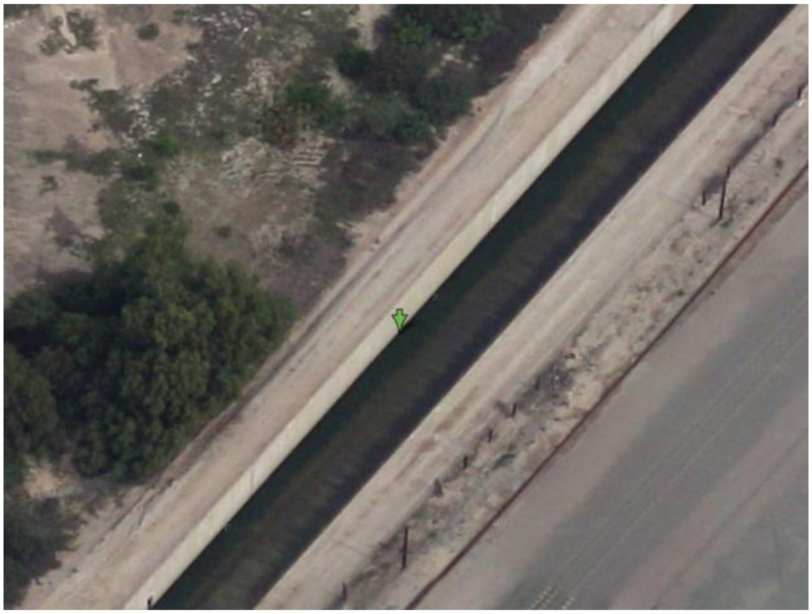
ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Aerial View



ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Looking Upstream

B-1.2 San Jose Creek TMDL site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Jose Creek	Tributary	ESGV_SJC_DS	N/A	TMDL	34.032233	-117.824894
General Description: TMDL monitoring site located at the downstream intersection of San Jose Creek and the ESGV Group's jurisdictional boundary.						



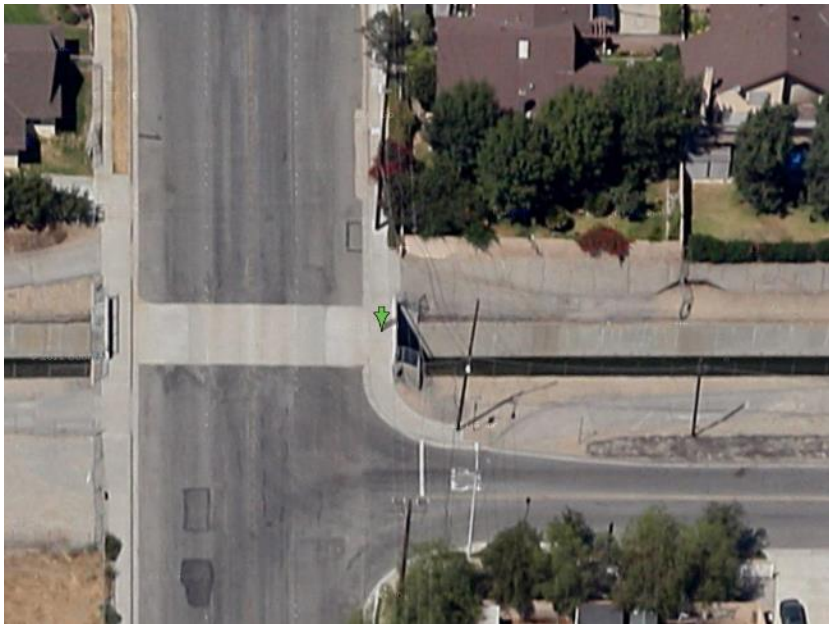
ESGV_SJC_DS Aerial View

ESGV_SJC_DS Looking Upstream

B-1.3 San Dimas Wash Special Study Assessment site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_SDW_DS	N/A	TMDL	34.121341	-117.820088

General Description: TMDL monitoring site located at the downstream intersection of San Dimas Wash and the ESGV Group's jurisdictional boundary.



ESGV_SDW_DS Aerial View

ESGV_SDW_DS Looking Downstream

B-1.4 Walnut Creek Wash Optional TMDL Site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_WCW_DS	N/A	TMDL	34.086672	-117.845592
General Description: TMDL monitoring site located at the downstream of Puddingstone Dam and upstream of the ESGV Group's jurisdictional boundary.						
 ESGV_SDW_DS Looking Downstream						

B-2 STORMWATER OUTFALL SITES

B-2.1 MTD 766

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	SW Outfall	34.12417	-117.80215

General Description: New SW outfall monitoring site discharging to San Dimas Wash just upstream of Foothill Blvd. Receives drainage from San Dimas and La Verne. Primary land use types include: 89% residential; 10% commercial/industrial; and 1% agricultural.

MTD 766 Aerial View

MTD 766

B-2.2 BI 0566 Line A

HUC-12 Equivalent	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	SW Outfall	34.09926	-117.75468

General Description: New SW outfall monitoring site discharging to Thompson Wash upstream of Bonita Ave. Receives drainage from Pomona and Claremont. Primary land use types include: 83% residential; 15% commercial/industrial; and 2% open space.

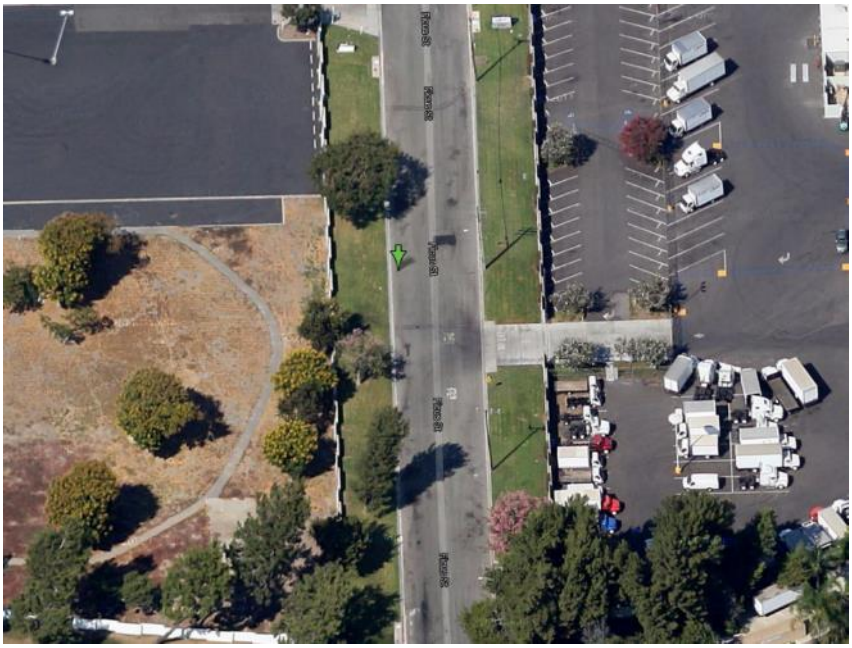
BI 0566 Line A Aerial View

BI 0566 Line A

B-2.3 San Antonio Drain Unit 1

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	SW Outfall	34.01976	-117.73575

General Description: New SW outfall monitoring site discharging to Chino Creek. Located on Ficus St north of Riverside Dr at nearest manhole upstream of outfall. Receives drainage from Pomona. Primary land use types include: 67% residential; 31% commercial/industrial; and 2% open space.



San Antonio Drain Unit 1 Aerial View

San Antonio Drain Unit 1 Looking South Towards Outfall

Attachment C

Table E-2 of the Monitoring and Reporting Program

Table E-2 of the Monitoring and Reporting Program

CONSTITUENTS
CONVENTIONAL POLLUTANTS
Oil and Grease
Total Phenols
Cyanide
pH
Temperature
Dissolved Oxygen
BACTERIA
Fecal Coliform
E. coli
GENERAL
Dissolved Phosphorus
Total Phosphorus
Turbidity
Total Suspended Solids
Total Dissolved Solids
Volatile Suspended Solids
Total Organic Carbon
Total Petroleum Hydrocarbon
Biochemical Oxygen Demand
Chemical Oxygen Demand
Total Ammonia-Nitrogen
Total Kjeldahl Nitrogen
Nitrate-Nitrogen
Alkalinity
Specific Conductance
Total Hardness
MBAS
Chloride
Fluoride
Methyl tertiary butyl ether (MTBE)

CONSTITUENTS
Perchlorate
METALS
Aluminum
Antimony
Arsenic
Beryllium
Cadmium
Chromium (total)
Chromium (Hexavalent)
Iron
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc
SEMIVOLATILE ORGANIC COMPOUNDS
Acids
2-Chlorophenol
4-Chloro-3-methylphenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol
Base/Neutral
Acenaphthene
Acenaphthylene

CONSTITUENTS
Anthracene
Benzidine
1,2 Benzanthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
3,4 Benzofluoranthene
Benzo(k)fluoranthene
Bis(2-Chloroethoxy) methane
Bis(2-Chloroisopropyl) ether
Bis(2-Chloroethyl) ether
Bis(2-Ethylhexl) phthalate
4-Bromophenyl phenyl ether
Butyl benzyl phthalate
2-Chloroethyl vinyl ether
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Chrysene
Dibenzo(a,h)anthracene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
3,3-Dichlorobenzidine
Diethyl phthalate
Dimethyl phthalate
di-n-Butyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
4,6 Dinitro-2-methylphenol
1,2-Diphenylhydrazine
di-n-Octyl phthalate
Fluoranthene
Fluorene
Hexachlorobenzene

CONSTITUENTS
Hexachlorobutadiene
Hexachloro-cyclopentadiene
Hexachloroethane
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-dimethyl amine
N-Nitroso-diphenyl amine
N-Nitroso-di-n-propyl amine
Phenanthrene
Pyrene
1,2,4-Trichlorobenzene
CHLORINATED PESTICIDES
Aldrin
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (lindane)

CONSTITUENTS
alpha-chlordane
gamma-chlordane
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dieldrin
alpha-Endosulfan
beta-Endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor Epoxide
Toxaphene
POLYCHLORINATED BIPHENYELS
Aroclor-1016
Aroclor-1221
Aroclor-1232

CONSTITUENTS
Aroclor-1242
Aroclor-1248
Aroclor-1254
Aroclor-1260
ORGANOPHOSPHATE PESTICIDES
Atrazine
Chlorpyrifos
Cyanazine
Diazinon
Malathion
Prometryn
Simazine
HERBICIDES
2,4-D
Glyphosate
2,4,5-TP-SILVEX

Attachment D

Analytical and Monitoring Procedures

Attachment D details the monitoring procedures that will be utilized to collect and analyze samples to meet the goals and objectives of the CIMP and the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful sample collection and analysis. The attachment is divided into the following sections:

1. Analytical Procedures
2. Sampling Methods and Sample Handling
3. Quality Assurance/Quality Control
4. Instrument/Equipment Calibration and Frequency
5. Monitoring Procedures References

D-1 ANALYTICAL PROCEDURES

The following subsections detail the analytical procedures for data generated in the field and in the laboratory.

D-1.1 Field Parameters

Portable field meters will measure field parameters within specifications outlined in **Table D-1**.

Table D-1.
Analytical Methods and Project Reporting Limits for Field Parameters

Parameter	Method	Range	Project RL
Current velocity	Electromagnetic	-0.5 to +20 ft/s	0.05 ft/s
pH	Electrometric	0 – 14 pH units	NA
Temperature	High stability thermistor	-5 – 50 oC	NA
Dissolved oxygen	Membrane	0 – 50 mg/L	0.5 mg/L
Turbidity	Nephelometric	0 – 3000 NTU	0.2 NTU
Conductivity	Graphite electrodes	0 – 10 mmhos/cm	2.5 umhos/cm

RL – Reporting Limit NA – Not applicable

D-1.2 Analytical Methods and Method Detection and Reporting Limits

Method detection limits (MDL) and reporting limits (RLs) must be distinguished for proper understanding and data use. The MDL is the minimum analyte concentration that can be measured and reported with a 99% confidence that the concentration is greater than zero. The RL represents the concentration of an analyte that can be routinely measured in the sampled matrix within stated limits and with confidence in both identification and quantitation.

For this CIMP, RLs must be verifiable by having the lowest non-zero calibration standard or calibration check sample concentration at or less than the RL. RLs have been established in this CIMP based on the verifiable levels and general measurement capabilities demonstrated for each

method. These RLs should be considered as maximum allowable RLs to be used for laboratory data reporting. Note that samples diluted for analysis may have sample-specific RLs that exceed these RLs. This will be unavoidable on occasion. However, if samples are consistently diluted to overcome matrix interferences, the analytical laboratory will be required to notify the ESGV Group regarding how the sample preparation or test procedure in question will be modified to reduce matrix interferences so that project RLs can be met consistently.

Analytical methods and RLs required for samples analyzed in the laboratory are summarized in **Table D-2** and **Table D-3** for analysis in water, sediment, and tissue, respectively. For organic constituents, environmentally relevant detection limits will be used to the extent practicable. The RLs listed in **Table D-2** are consistent with the requirements of the available minimum levels provided in the MRP, except for total dissolved solids, which was set equal to the minimum level identified in the California State Water Resources Control Board's Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Project Plan. Alternative methods with RLs that are at or below those presented in **Table D-2** and **Table D-3** are considered equivalent and can be used in place of the methods presented in **Table D-2** and **Table D-3**.

Prior to the analysis of any environmental samples, the laboratory must have demonstrated the ability to meet the minimum performance requirements for each analytical method presented in **Table D-2** and **Table D-3**. The initial demonstration of capability includes the ability to meet the project RLs, the ability to generate acceptable precision and accuracy, and other analytical and quality control parameters documented in this CIMP. Data quality objectives for precision and accuracy are summarized in **Table D-4**.

Table D-2.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Water Samples

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
Toxicity				
Pimephales promelas	EPA-821-R-02-013 (1000.0) and EPA-821-R-02-012 (2000.0)	NA	NA	NA
Ceriodaphnia dubia	EPA-821-R-02-013 (1002.0) and EPA-821-R-02-012 (2002.0)	NA	NA	NA
Selenastrum capricornutum	EPA-821-R-02-013 (1003.0)	NA	NA	NA
Bacteria				
Escherichia coli	SM 9221	MPN/100mL	10	235
Conventionals				

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
Oil and Grease	EPA 1664A	mg/L	5	5
Cyanide	SM 4500-CN E	mg/L	0.005	0.005
pH	SM 4500 H+B/ EPA 9040/ EPA 9045D	NA	NA	0-14
Dissolved Oxygen	NA	mg/L	0.5	Sensitivity to 5 mg/L
Specific Conductance	EPA 120.1	µs/cm	1	1
Turbidity	EPA 180.1	NTU	0.1	0.1
Total Hardness	SM 2340C	mg/L	2	2
Dissolved Organic Carbon	SM 5310B	mg/L	0.6	NA
Total Organic Carbon	SM 5310B	mg/L	1	1
Total Petroleum Hydrocarbon	EPA 1664	mg/L	5	5
Biochemical Oxygen Demand	SMOL-5210	mg/L	5	2
Chemical Oxygen Demand	SM 5220D	mg/L	20	20-900
MBAS	SM 5540C	mg/L	0.5	0.5
Chloride	EPA 300.0	mg/L	1	2
Fluoride	EPA 300.0	mg/L	0.1	0.1
Sulfate	EPA 375.4	mg/L	1	NA
Perchlorate	EPA 314.0	µg/L	4	4
Chlorophyll a	SM 10200 H	mg/L	0.01	NA
Dissolved Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Total Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Orthophosphate-P	EPA 300.0	mg/L	0.2	NA
Ammonia (as N)	SM 4500-NH3 C	mg/L	0.1	0.1
Nitrate + Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrate (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Total Kjehdahl Nitrogen (TKN)	SM 4500-NH3 C	mg/L	0.1	0.1
Total Alkalinity	SM 2320B	mg/L	2	2
Solids				
Suspended Sediment Concentration (SSC)	ASTMD 3977-97	mg/L	3	NA
Total Suspended Solids (TSS)	SM 2540D	mg/L	2	2
Total Dissolved Solids (TDS)	SM 2540C	mg/L	10	2

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
Volatile Suspended Solids	EPA 1684	mg/L	1	2
Metals in Freshwater (dissolved and total)				
Aluminum	EPA 200.8	µg/L	100	100
Antimony	EPA 200.8	µg/L	0.5	0.5
Arsenic	EPA 200.8	µg/L	1	1
Beryllium	EPA 200.8	µg/L	0.5	0.5
Cadmium	EPA 200.8	µg/L	0.25	0.25
Chromium (total)	EPA 200.8	µg/L	0.5	0.5
Chromium (Hexavalent)	EPA 200.8	µg/L	5	5
Copper	EPA 200.8	µg/L	0.5	0.5
Iron	EPA 200.8	µg/L	100	100
Lead	EPA 200.8	µg/L	0.5	0.5
Mercury	EPA 1631	µg/L	0.5	0.5
Nickel	EPA 200.8	µg/L	1	1
Selenium	EPA 200.8	µg/L	1	1
Silver	EPA 200.8	µg/L	0.25	0.25
Thallium	EPA 200.8	µg/L	1	1
Zinc	EPA 200.8	µg/L	1	1
Organochlorine Pesticides				
Aldrin	EPA 608	ng/L	5	5
alpha-BHC	EPA 608	ng/L	10	10
beta-BHC	EPA 608	ng/L	5	5
delta-BHC	EPA 608	ng/L	5	5
gamma-BHC (Lindane)	EPA 608	ng/L	20	20
Chlordane-alpha	EPA 608	ng/L	100	100
Chlordane-gamma	EPA 608	ng/L	100	100
Oxychlordane	EPA 608	ng/L	200	NA
Cis-nonachlor	EPA 608	ng/L	200	NA
Trans-nonachlor	EPA 608	ng/L	200	NA
2,4'-DDD	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDE	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDT	EPA 625/ 8270C	ng/L	2	NA

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
4,4'-DDD	EPA 625/ 8270C	ng/L	50	50
4,4'-DDE	EPA 625/ 8270C	ng/L	50	50
4,4'-DDT	EPA 625/ 8270C	ng/L	10	10
Dieldrin	EPA 608	ng/L	10	10
Endosulfan I	EPA 608	ng/L	20	20
Endosulfan II	EPA 608	ng/L	10	10
Endosulfan Sulfate	EPA 608	ng/L	50	50
Endrin	EPA 608	ng/L	10	10
Endrin Aldehyde	EPA 608	ng/L	10	10
Heptachlor	EPA 608	ng/L	10	10
Heptachlor Epoxide	EPA 608	ng/L	10	10
Toxaphene	EPA 608	ng/L	500	500
PCBs				
Congeners[2]	EPA 625/ 8270C	ng/L	2	NA
Aroclors (1016, 1221, 1232, 1242, 1248, 1254, 1260)	EPA 608/ 625/ 8270C	ng/L	500	500
Organophosphorus Pesticides				
Chlorpyrifos	EPA 614	ng/L	50	50
Diazinon	EPA 614	ng/L	10	10
Malathion	EPA 614	ng/L	1000	1000
Triazine				
Atrazine	EPA 530	µg/L	2	2
Cyanazine	EPA 530	µg/L	2	2
Prometryn	EPA 530	µg/L	2	2
Simazine	EPA 530	µg/L	2	2
Dioxins				
2,3,7,8-TCDD	EPA 1613	ng/L	0.005	NA
1,2,3,7,8-PeCDD	EPA 1613	ng/L	0.025	NA
1,2,3,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
2,3,4,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDD	EPA 1613	ng/L	0.025	NA

Parameter/Constituent	Method(1)	Units	Project RL	MRP Table E-2 ML
1,2,3,7,8,9-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,7,8,9-HxCDF	EPA 1613	ng/L	0.025	NA
2,3,4,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8,9-HpCDF	EPA 1613	ng/L	0.025	NA
OCDD	EPA 1613	ng/L	0.025	NA
OCDF	EPA 1613	ng/L	0.050	NA
Herbicides				
2,4-D	EPA 8151A	µg/L	10	10
Glyphosate	EPA 547	µg/L	5	5
2,4,5-TP-SILVEX	EPA 8151A	µg/L	0.5	0.5
Semivolatile Organic Compounds (SVOCs)				
1,2-Diphenylhydrazine	EPA 625	µg/L	1	1
2,4,6-Trichlorophenol	EPA 625	µg/L	10	10
2,4-Dichlorophenol	EPA 625	µg/L	1	1
2,4-Dimethylphenol	EPA 625	µg/L	2	2
2,4-Dinitrophenol	EPA 625	µg/L	5	5
2,4-Dinitrotoluene	EPA 625	µg/L	5	5
2,6-Dinitrotoluene	EPA 625	µg/L	5	5
2-Chloronaphthalene	EPA 625	µg/L	10	10
2-Chlorophenol	EPA 625	µg/L	2	2
2-Methyl-4,6-dinitrophenol	EPA 625	µg/L	5	5
2-Nitrophenol	EPA 625	µg/L	10	10
3,3'-Dichlorobenzidine	EPA 625	µg/L	5	5
4-Bromophenyl phenyl ether	EPA 625	µg/L	5	5
4-Chloro-3-methylphenol	EPA 625	µg/L	1	1
4-Chlorophenyl phenyl ether	EPA 625	µg/L	5	5
4-Nitrophenol	EPA 625	µg/L	5	5
Acenaphthene	EPA 625	µg/L	1	1

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Acenaphthylene	EPA 625	µg/L	2	2
Anthracene	EPA 625	µg/L	2	2
Benzidine	EPA 625	µg/L	5	5
Benzo(a)anthracene	EPA 625	µg/L	5	5
Benzo(a)pyrene	EPA 625	µg/L	2	2
Benzo(b)fluoranthene	EPA 625	µg/L	10	10
Benzo(g,h,i)perylene	EPA 625	µg/L	5	5
Benzo(k)fluoranthene	EPA 625	µg/L	2	2
Benzyl butyl phthalate	EPA 625	µg/L	10	10
bis(2-Chloroethoxy) methane	EPA 625	µg/L	5	5
bis(2-Chloroisopropyl) ether	EPA 625	µg/L	2	2
bis(2-Chloroethyl) ether	EPA 625	µg/L	1	1
bis(2-Ethylhexyl) phthalate	EPA 625	µg/L	5	5
Chrysene	EPA 625	µg/L	5	5
Dibenzo(a,h)anthracene	EPA 625	µg/L	0.1	0.1
Diethyl phthalate	EPA 625	µg/L	2	2
Dimethyl phthalate	EPA 625	µg/L	2	2
Di-n-butylphthalate	EPA 625	µg/L	10	10
Di-n-octylphthalate	EPA 625	µg/L	10	10
Fluoranthene	EPA 625	µg/L	0.05	0.05
Fluorene	EPA 625	µg/L	0.1	0.1
Hexachlorobenzene	EPA 625	µg/L	1	1
Hexachlorobutadiene	EPA 625	µg/L	1	1
Hexachloro-cyclo pentadiene	EPA 625	µg/L	5	5
Hexachloroethane	EPA 625	µg/L	1	1
Indeno(1,2,3-cd)pyrene	EPA 625	µg/L	0.05	0.05
Isophorone	EPA 625	µg/L	1	1
Naphthalene	EPA 625	µg/L	0.2	0.2
Nitrobenzene	EPA 625	µg/L	1	1
N-Nitroso-dimethyl amine	EPA 625	µg/L	5	5
N-Nitrosodiphenylamine	EPA 625	µg/L	1	1
N-Nitroso-di-n-propyl amine	EPA 625	µg/L	5	5

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Pentachlorophenol	EPA 625	µg/L	2	2
Phenanthrene	EPA 625	µg/L	0.05	0.05
Total Phenols	EPA 625	mg/L	0.2	0.1
Phenol	EPA 625	µg/L	1	1
Pyrene	EPA 625	µg/L	0.05	0.05
Volatile Organic Compounds				
1,2,4-Trichlorobenzene	EPA 625	µg/L	1	1
1,2-Dichlorobenzene	EPA 625	µg/L	1	1
1,3-Dichlorobenzene	EPA 625	µg/L	1	1
1,4-Dichlorobenzene	EPA 625	µg/L	1	1
2-Chloroethyl vinyl ether	EPA 625	µg/L	1	1
Methyl tert-butyl ether (MTBE)	EPA 625	µg/L	1	1

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCB congeners includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-3.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Sediment

Parameter/Constituent	Method(1)	Units	Project RL
General Parameters			
% Solids	EPA 1684	%	NA
Total Organic Carbon (TOC)	SM5310B	% Dry Weight	0.05
Chlordane Compounds			
alpha-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
gamma-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
Oxychlordane	USEPA 8081A/8270C	ng/dry g	0.5
trans-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
cis-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
Other OC Pesticides			
2,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
Total DDT	USEPA 8081A/8270C	ng/dry g	NA
Dieldrin	USEPA 8081A/8270C	ng/dry g	0.02
PAHs			
1-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
1-Methylphenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
2-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
2,6-Dimethylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Acenaphthene	USEPA 8270C/8270D - SIM	ng/dry g	20
Anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(e)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Biphenyl	USEPA 8270C/8270D - SIM	ng/dry g	20
Chrysene	USEPA 8270C/8270D - SIM	ng/dry g	20
Dibenz(a,h)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Fluoranthene	USEPA 8270C/8270D - SIM	ng/dry g	20

Parameter/Constituent	Method(1)	Units	Project RL
Fluorene	USEPA 8270C/8270D - SIM	ng/dry g	20
Naphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Perylene	USEPA 8270C/8270D - SIM	ng/dry g	20
Phenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Total PCBs(2)	USEPA 8270C/8270D-SIM	ng/dry g	0.2
Metals			
Cadmium	EPA 6020	µg/dry g	0.05
Copper	EPA 6020	µg/dry g	0.05
Lead	EPA 6020	µg/dry g	0.05
Silver	EPA 6020	µg/dry g	0.05
Zinc	EPA 6020	µg/dry g	0.05

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCBs includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-4.
Data Quality Objectives

Parameter	Accuracy	Precision	Recovery	Completeness
Field Measurements				
Water Velocity (for Flow calc.)	2%	NA	NA	90%
pH	+ 0.2 pH units	+ 0.5 pH units	NA	90%
Temperature	+ 0.5 oC	+ 5%	NA	90%
Dissolved Oxygen	+ 0.5 mg/L	+ 10%	NA	90%
Turbidity	10%	10%	NA	90%
Conductivity	5%	5%	NA	90%
Laboratory Analyses – Water				
Conventionals and Solids	80 – 120%	0 – 25%	80 – 120%	90%
Aquatic Toxicity	(1)	(2)	NA	90%
Nutrients(3)	80 – 120%	0 – 25%	90 – 110%	90%
Metals(3)	75 – 125%	0 – 25%	75 – 125%	90%
Dioxin(3)	50 – 150%	0 – 25%	50 – 150%	90%
Semi-Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Triazines(3)	50 – 150%	0 – 25%	50 – 150%	90%
Herbicides(3)	50 – 150%	0 – 25%	50 – 150%	90%
OC Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Congeners(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Aroclors(3)	50 – 150%	0 – 25%	50 – 150%	90%
OP Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
Laboratory Analyses – Sediment				
% Solids	NA	NA	NA	90%
Total Organic Carbon (TOC)	80 – 120%	0 – 25%	80 – 120%	90%
OC Pesticides(3)	25 – 140%	0 – 30%	25 – 140%	90%
PCB Congeners(3)	60 – 125%	0 – 30%	60 – 125%	90%
PAHs(3)	50 – 150%	0 – 25%	50 – 150%	90%
Metals(3)	60 – 130%	0 – 30%	60 – 130%	90%
Laboratory Analyses – Tissue				
Chlordane(3)	50 – 150%	0 – 25%	50 – 150%	90%
DDTs(3)	35 – 140%	0 – 30%	35 – 140%	90%

Dieldrin(3)	50 – 150%	0 – 25%	50 – 150%	90%

1. Must meet all method performance criteria relative to the reference toxicant test.
2. Must meet all method performance criteria relative to sample replicates.
3. See **Table D-2** and **Table D-3**for a list of individual constituents in each suite for water, sediment, and tissue, respectively.

D-1.3 Method Detection Limit Studies

Any laboratory performing analyses under this program must routinely conduct MDL studies to document that the MDLs are less than or equal to the project-specified RLs. If any analytes have MDLs that do not meet the project RLs, the following steps must be taken:

- Perform a new MDL study using concentrations sufficient to prove analyte quantitation at concentrations less than or equal to the project-specified RLs per the procedure for the Determination of the Method Detection Limit presented in Revision 1.1, 40 Code of Federal Regulations (CFR) 136, 1984.
- No samples may be analyzed until the issue has been resolved. MDL study results must be available for review during audits, data review, or as requested. Current MDL study results must be reported for review and inclusion in project files.

An MDL is developed from seven aliquots of a standard containing all analytes of interest spiked at five times the expected MDL. These aliquots are processed and analyzed in the same manner as environmental samples. The results are then used to calculate the MDL. If the calculated MDL is less than 0.33 times the spiked concentration, another MDL study should be performed using lower spiked concentrations.

D-1.4 Project Reporting Limits

Laboratories generally establish RLs that are reported with the analytical results—these may be called reporting limits, detection limits, reporting detection limits, or several other terms by the reporting laboratory. These laboratory limits must be less than or equal to the project RLs listed in **Table D-2**. Wherever possible, project RLs are lower than the relevant numeric criteria or toxicity thresholds. Laboratories performing analyses for this project must have documentation to support quantitation at the required levels.

D-1.5 Laboratory Standards and Reagents

All stock standards and reagents used for standard solutions and extractions must be tracked through the laboratory. The preparation and use of all working standards must be documented according to procedures outlined in each laboratory's Quality Assurance (QA) Manual; standards must be traceable according to USEPA, A2LA or National Institute for Standards and Technology (NIST) criteria. Records must have sufficient detail to allow determination of the identity, concentration, and viability of the standards, including any dilutions performed to obtain the working standard. Date of preparation, analyte or mixture, concentration, name of preparer, lot or cylinder number, and expiration date, if applicable, must be recorded on each working standard.

D-1.6 Sample Containers, Storage, Preservation, and Holding Times

Sample containers must be pre-cleaned and certified free of contamination according to the USEPA specification for the appropriate methods. Sample container, storage and preservation, and holding time requirements are provided in **Table D-5**. The analytical laboratories will supply sample containers that already contain preservative (**Table D-5**), including ultra-pure hydrochloric and nitric acid, where applicable. After collection, samples will be stored at 4°C until arrival at the contract laboratory.

Table D-5.
Sample Container, Sample Volume, Initial Preservation, and Holding Time Requirements for Parameters Analyzed at a Laboratory

Parameter	Sample Container	Sample Volume[1]	Immediate Processing and Storage	Holding Time
Water				
Toxicity				
Initial Screening	Glass or FLPE-lined jerrican	40 L	Store at 4°C	36 hours[2]
Follow-Up Testing				
Phase I TIE				
E. coli (fresh)	PE	120 mL	Na2S2O3 and Store at 4°C	8 hours
Oil and Grease	PE	250 mL	HCl and Store at 4°C	28 days
Chlorophyll a	Amber PE	1 L	Store at 4°C	Filter w/in 48 hours, 28 days
Cyanide	PE	1 L	NaOH and Store at 4°C	14 days
Dissolved Organic Carbon (DOC)	PE	250 mL	Store at 4°C	Filter/28 days
Total Organic Carbon (TOC)	PE	250 mL	H2SO4 and Store at 4°C	28 days
Total Petroleum Hydrocarbon	Glass	1 L	HCl or H2SO4 and Store at 4°C	7/40 days[3]
Biochemical Oxygen Demand	PE	1L	Store at 4°C	48 hours
Chemical Oxygen Demand	PE	500 mL	H2SO4 and Store at 4°C	28 days
MBAS	PE	1 L	Store at 4°C	48 hours
Fluoride	PE	500 mL	None required	28 days

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
Chloride	PE	250 mL	Store at 4°C	28 days
Sulfate				28 days
Boron	PE	250-mL	Store at 4°C	180 days
Perchlorate	PE	500 mL	Store at 4°C	28 days
Nitrate Nitrogen	PE	250 mL	Store at 4°C	48 hours
Nitrite Nitrogen				
Orthophosphate-P				
Ammonia Nitrogen	Glass	250-mL	H2SO4 and Store at 4°C	28 days
Total and Dissolved Phosphorus				
Organic Nitrogen				
Nitrate + Nitrite (as N)				
Total Kjehdahl Nitrogen (TKN)	PE	250 mL	H2SO4 and Store at 4°C	28 days
Total Alkalinity	PE	500 mL	Store at 4°C	14 days
Suspended Sediment Concentration (SSC)	PE	250 mL	Store at 4°C	120 days
Total Suspended Solids (TSS)	PE	250 mL	Store at 4°C	7 days
Total Dissolved Solids (TDS)	PE	250 mL	Store at 4°C	7 days
Volatile Suspended Solids	PE	250 mL	Store at 4°C	7 days
Hardness	PE	500 mL	Store at 4°C	180 days
Metals				6 months(4)
Mercury	Glass	500 mL	Store at 4°C	48 Hours
Dioxin	Amber glass	2 x 1 L	Store at 4°C	1 year
PCBs, OC Pesticides, OP Pesticides,Triazine Pesticides	Amber glass	4 x 1 L	Store at 4°C	7/40 days(3)
Suspended Solids Analysis for Organics and Metals	Amber glass	20 x 1 L	Store at 4°C	1 year(5)
Herbicides	Glass	2 x 40 mL	Thiosulfate and Store at 4°C	14 days
Semivolatile Organic Compounds	Glass	2 x 1 L	Store at 4°C	7 days
Volatile Organic Compounds	VOA	3 x 40 mL	HCl and Store at 4°C	14 days
Sediment				

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
% Solids	Glass	2 x 8 oz jar	Store at 4°C	7 days
Total Organic Carbon (TOC)				1 year(6)
OC Pesticides, PCBs, PAHs				1 year(5)
Metals				
Tissue				
% Lipids	teflon sheet	200 g	Store on dry ice	1 year(5)
Chlordane				
DDTs				
Dieldrin				

PE – Polyethylene

4. Additional volume may be required for QC analyses.
5. Tests should be initiated within 36 hours of collection. The 36-hour hold time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, samples may be split from toxicity samples in the laboratory and analyzed for specific chemical parameters. All other sampling requirements for these samples are as specified in this document for the specific analytical method. Results of these analyses are not for any other use (e.g., characterization of ambient conditions) because of potential holding time exceedances and variance from sampling requirements.
6. 7/40 = 7 days to extract and 40 days from extraction to analysis.
7. 6 months after preservation.
8. One year if frozen, otherwise 14 days to extract and 40 days from extraction to analysis.
9. One year if frozen, otherwise 28 days.

D-1.7 Aquatic Toxicity Testing and Toxicity Identification Evaluations

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. Monitoring begins in the receiving water and the information gained is used to identify constituents for monitoring at outfalls to support the identification of pollutants that need to be addressed in the EWMP. The sub-sections below describe the detailed process for conducting aquatic toxicity monitoring, evaluating results, and the technical and logistical rationale. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP.

D-1.7.1 Sensitive Species Selection

The MRP (page E-32) states that a sensitivity screening to select the most sensitive test species should be conducted unless "a sensitive test species has already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s), then monitoring shall be conducted using only that test species." Previous relevant studies conducted

in the watershed should be considered. Such studies may have been completed via previous MS4 sampling, wastewater NPDES sampling, or special studies conducted within the watershed. The following discuss the species selection process for assessing aquatic toxicity in receiving waters.

As described in the MRP (page E-31), if samples are collected in receiving waters with salinity less than 1 part per thousand (ppt), or from outfalls discharging to receiving waters with salinity less than 1 ppt, toxicity tests should be conducted on the most sensitive test species in accordance with species and short-term test methods in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136). The freshwater test species identified in the MRP are:

- A static renewal toxicity test with the fathead minnow, Pimephales promelas (Larval Survival and Growth Test Method 1000.04).
- A static renewal toxicity test with the daphnid, Ceriodaphnia dubia (Survival and Reproduction Test Method 1002.05).
- A static renewal toxicity test with the green alga, Selenastrum capricornutum (also named Raphidocelis subcapitata) (Growth Test Method 1003.0).

The three test species were evaluated to determine if either a sensitive test species had already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s). In reviewing the available data in the watershed, metals, historical organics, and currently used pesticides have been identified as problematic and are generally considered the primary aquatic life toxicants of concern found in urban runoff. Given the knowledge of the presence of these potential toxicants in the watershed, the sensitivities of each of the three species were considered to evaluate which is the most sensitive to the potential toxicants in the watershed.

Ceriodaphnia dubia (C. dubia) has been reported as a sensitive test species for historical and current use pesticides and metals, and studies indicate that it is more sensitive to the toxicants of concern than Pimephales promelas (P. promelas) or Selenastrum capricornutum (S. capricornutum). In Aquatic Life Ambient Freshwater Quality Criteria - Copper, the USEPA reports greater sensitivity of C. dubia to copper (species mean acute value of 5.93 µg/l) compared to P. promelas (species mean acute value of 69.93 µg/l; EPA, 2007). C. dubia's relatively higher sensitivity to metals is common across multiple metals. Additionally, researchers at the University of California (UC), Davis reviewed available reported species sensitivity values in developing pesticide criteria for the Central Valley Regional Water Quality Control Board. The UC Davis researchers reported higher sensitivity of C. dubia to diazinon and bifenthrin (species mean acute value of 0.34 µg/l and 0.105 µg/l) compared to P. promelas (species mean acute value of 7804 µg/l and 0.405 µg/l; Palumbo et al., 2010a,b). Additionally, a study of the City of Stockton urban stormwater runoff found acute and chronic toxicity to C. dubia, with no toxicity to S. capricornutum or P. promelas (Lee and Lee, 2001). The toxicity was

attributed to organophosphate pesticides, indicating a higher sensitivity of C. dubia compared to S. capricornutum or P. promelas. C. dubia is also the test organism selected to assess the ambient toxicity of the Los Angeles River by the Los Angeles River Watershed Monitoring Program and has been the most-sensitive species to the Donald C. Tillman and the Los Angeles-Glendale Water Reclamation Plant effluent as well as the Los Angeles River receiving water in the vicinity of the water treatment plants. While P. promelas is generally less sensitive to metals and pesticides, this species can be more sensitive to ammonia than C. dubia. However, as ammonia is not typically a constituent of concern for urban runoff and ammonia is not consistently observed above the toxic thresholds in the watershed, P. promelas is not considered a particularly sensitive species for evaluating the impacts of urban runoff in receiving waters in the watershed.

S. capricornutum is a species sensitive to herbicides. However, while sometimes present in urban runoff, herbicides are not identified as a potential toxicant in the watershed. Additionally, S. capricornutum is not considered the most sensitive species as it is not sensitive to pyrethroids or organophosphate pesticides and is not as sensitive to metals as C. dubia. Additionally, the S. capricornutum growth test can be affected by high concentrations of suspended and dissolved solids, color, and pH extremes, which can interfere with the determination of sample toxicity. As a result, it is common to manipulate the sample by centrifugation and filtration to remove solids to conduct the test; however, this process may affect the toxicity of the sample. In a study of urban highway stormwater runoff (Kayhanian et. al, 2008), S. capricornutum response to the stormwater samples was more variable than the C. dubia and the P. promelas and in some cases the algal growth was possibly enhanced due to the presence of stimulatory nutrients. Also, in a study on the City of Stockton urban stormwater runoff (Lee and Lee, 2001) the S. capricornutum tests rarely detected toxicity where the C. dubia and the P. promelas regularly detected toxicity.

As C. dubia is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, C. dubia is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool. The ease of sample collection and higher sensitivity will support assessing the presence of ambient receiving water toxicity or long term effects of toxic stormwater over time. As such, toxicity testing in the freshwater portions of the watershed will be conducted using C. dubia. However, C. dubia test organisms are typically cultured in moderately hard waters (80-100 mg/L CaCO3) and can have increased sensitivity to elevated water hardness greater than 400 mg/L CaCO3), which is beyond their typical habitat range. Because of this, in instances where hardness in site waters exceeds 400 mg/L (CaCO3), an alternative test species may be used. Daphnia magna is more tolerant to high hardness levels and is a suitable substitution for C. dubia in these instances (Cowgill and Milazzo, 1990).

D-1.7.2 Testing Period

The following describes the testing periods to assess toxicity in samples collected in the WMP area during dry and wet weather conditions. Although wet weather conditions in the region generally persist for less than the chronic testing periods (typically 7 days), the *C. dubia* chronic testing, will be used for wet weather toxicity testing in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA, 2002b). Utilization of chronic tests on wet weather samples are not expected to generate results representative of the typical conditions found in the receiving water intended to be simulated by toxicity testing.

Chronic toxicity tests will be used to assess both survival and reproductive/growth endpoints for *C. dubia* in dry weather samples. Chronic testing will be conducted on undiluted samples in accordance with *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (USEPA, 2002a).

D-1.7.3 Toxicity Endpoint Assessment and Toxicity Identification Evaluation Triggers

Per the MRP, toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration (IWC) is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010). Follow-up triggers are generally based on the Permit specified statistical assessment as described below.

For acute *C. dubia* toxicity testing, if a ≥50% reduction in survival or reproduction is observed between the sample and laboratory control that is statistically significant, a toxicity identification evaluation (TIE) will be performed.

TIE procedures will be initiated as soon as possible after the toxicity trigger threshold is observed to reduce the potential for loss of toxicity due to extended sample storage. If the cause of toxicity is readily apparent or is caused by pathogen related mortality (PRM) or epibiont interference with the test, the result will be rejected. If necessary, a modified testing procedure will be developed for future testing.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE baseline "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity

D-1.7.4 Toxicity Identification Evaluation Approach

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s).

The TIE approach is divided into three phases as described in USEPA's 1991 Methods for Aquatic Toxicity Identification Evaluations – Phase I Toxicity Characterization Procedures – Second Edition (EPA/600/6-9/003) and briefly summarized as follows:

- Phase I utilizes methods to characterize the physical/chemical nature of the constituents which cause toxicity. Such characteristics as solubility, volatility and filterability are determined without specifically identifying the toxicants. Phase I results are intended as a first step in specifically identifying the toxicants but the data generated can also be used to develop treatment methods to remove toxicity without specific identification of the toxicants.
- Phase II utilizes methods to specifically identify toxicants.
- Phase III utilizes methods to confirm the suspected toxicants.

A Phase I TIE will be conducted on samples that exceed a TIE trigger described above. Water quality data will be reviewed to future support evaluation of potential toxicants. TIEs will perform the manipulations described in **Table D-6**. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs (USEPA, 1991, 1992, 1993a-b).

Table D-6.
Aquatic Toxicity Identification Evaluation Sample Manipulations

TIE Sample Manipulation	Expected Response
pH Adjustment (pH 7 and 8.5)	Alters toxicity in pH sensitive compounds (i.e., ammonia and some trace metals)
Filtration or centrifugation*	Removes particulates and associated toxicants
Ethylenedinrilo-Tetraacetic Acid (EDTA) or Cation Exchange Column*	Chelates trace metals, particularly divalent cationic metals
Sodium thiosulfate (STS) addition	Reduces toxicants attributable to oxidants (i.e., chlorine) and some trace metals
Piperonyl Butoxide (PBO) *	Reduces toxicity from organophosphate pesticides such as diazinon, chlorpyrifos and malathion, and enhances pyrethroid toxicity
Carboxylesterase addition(1)	Hydrolyzes pyrethroids
Temperature adjustments(2)	Pyrethroids become more toxic when test temperatures are decreased
Solid Phase Extraction (SPE) with C18 column*	Removes non-polar organics (including pesticides) and some relatively non-polar metal chelates
Sequential Solvent Extraction of C18 column	Further resolution of SPE-extracted compounds for chemical analyses
No Manipulation*	Baseline test for comparing the relative effectiveness of other manipulations

* Denotes treatments that will be conducted during the initiation of toxicity monitoring, but may be revised as the program is implemented. These treatments were recommended for initial stormwater testing in Appendix E (Toxicity Testing Tool for Storm Water Discharges) of the State Water Resources Control Board's June 2012 Public Review Draft "Policy for Toxicity Assessment and Control".

1. Carboxylesterase addition has been used in recent studies to help identify pyrethroid-associated toxicity (Wheelock et al., 2004; Weston and Amweg, 2007). However, this treatment is experimental in nature and should be used along with other pyrethroid-targeted TIE treatments (e.g., PBO addition).
2. Temperature adjustments are another recent manipulation used to evaluate pyrethroid-associated toxicity. Lower temperatures increase the lethality of pyrethroid pesticides. (Harwood, You and Lydy, 2009)

The ESGV Group will identify the cause(s) of toxicity using the treatments in **Table D-6** and, if possible, using the results of water column chemistry analyses. After any initial determinations of the cause of toxicity, the information may be used during future events to modify the targeted treatments to more closely target the expected toxicant or to provide additional treatments to narrow the toxicant cause(s). Moreover, if the toxicant or toxicant class is not initially identified, toxicity monitoring during subsequent events will confirm if the toxicant is persistent or a short-term episodic occurrence.

As the primary goals of conducting TIEs is to identify pollutants for incorporation into outfall monitoring, narrowing the list of toxicants following Phase I TIEs via Phase II or III TIEs is not necessary if the toxicant class determined during the Phase I TIE is sufficient for: (1) identifying additional pollutants for outfall monitoring; and/or (2) identifying control measures. Thus, if the specific pollutant(s) or the analytical class of pollutant (e.g., metals that are analyzed via USEPA Method 200.8) are identified then sufficient information is available to inform the addition of pollutants to outfall monitoring.

Phase II TIEs may be ntify the pollutant or analytical class of pollutants, the result of a TIE is considered conclusive. utilized to identify specific constituents causing toxicity in a given sample if information beyond what is gained via the Phase I TIE and review of chemistry data is needed to identify constituents to monitor or management actions. Phase III TIEs will be conducted following any Phase II TIEs.

For the purposes of determining whether a TIE is inconclusive, TIEs will be considered inconclusive if:

- The toxicity is persistent (i.e., observed in the baseline), and
- The cause of toxicity cannot be attributed to a class of constituents (e.g., insecticides, metals, etc.) that can be targeted for monitoring.

If (1) a combination of causes that act in a synergistic or additive manner are identified; (2) the toxicity can be removed with a treatment or via a combination of the TIE treatments; or (3) the analysis of water quality data collected during the same event ide

In cases where significant endpoint toxicity effects ≥50% are observed in the original sample, but the follow-up TIE baseline "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity.

Note that the MRP (page E-33) allows a TIE Prioritization Metric (as described in Appendix E of the Southern California Stormwater Monitoring Coalition's (SMC) Model Monitoring Program) for use in ranking sites for TIEs. However, as the extent to which TIEs will be conducted is unknown, prioritization cannot be conducted at this time. However, prioritization may be utilized in the future based on the results of toxicity monitoring and an approach to prioritization will be developed through the CIMP adaptive management process and will be described in future versions of the CIMP.

13.1.1 Follow Up on Toxicity Testing Results

Per Parts VIII.B.c.vi and XI.G.1.d of the MRP, if the results of a TIE on a receiving sample are inconclusive, a toxicity test conducted during the same condition (i.e., wet or dry weather), using the same test species, will be conducted at applicable upstream outfalls as soon as feasible (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a inconclusive TIE). The same TIE approach presented in Sections D-1.7.3 and D-1.7.4, respectively will be followed based on the results of the outfall sample.

If a toxicant or class of toxicants is identified through a TIE, the MRP (page E-33) indicates the following actions should be taken:

- ULARWMAG Members shall analyze for the toxicant(s) during the next scheduled sampling event in the discharge from the outfall(s) upstream of the receiving water location.
- If the toxicant is present in the discharge from the outfall at levels above the applicable receiving water limitation, a toxicity reduction evaluation (TRE) will be performed for that toxicant.

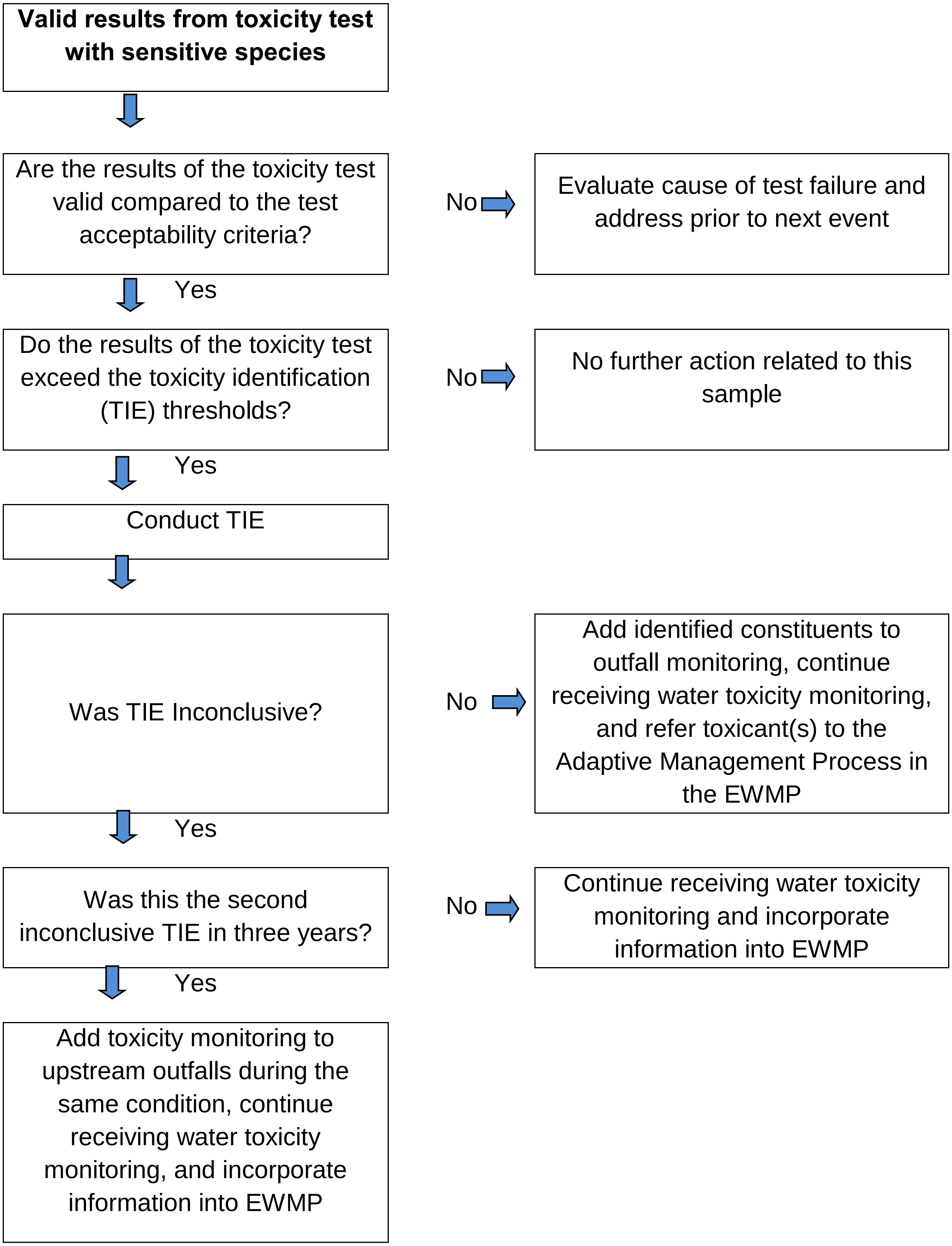
The list of constituents monitored at outfalls identified in the CIMP will be modified based on the results of the TIEs. Monitoring for constituents identified based on the results of a TIE will occur as soon as feasible following the completion of a successful TIE (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a successful TIE).

The requirements of the TREs will be met as part of the adaptive management process in the ULAR EWMP rather than conducted via the CIMP. The identification and implementation of control measures to address the causes of toxicity are tied to management of the stormwater program, not the CIMP. It is expected that the requirements of TREs will only be conducted for toxicants that are not already addressed by an existing Permit requirement (i.e., TMDLs) or existing or planned management actions.

D-1.7.5 Summary of Aquatic Toxicity Monitoring

The approach to conducting aquatic toxicity monitoring as described in the previous sections of this Attachment is summarized in detail in **Figure D-2**. The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

Figure D-2.
Detailed Aquatic Toxicity Assessment Process



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D-1.8 Bio-Assessment/Macrobenthic Community Assessment

The LACFCD has indicated that it will continue its participation in the SMC Regional Bioassessment Monitoring Program on behalf of the ESGV Group. Thus no specific monitoring and analytical procedures are included in the CIMP at this time. If in the future, such monitoring is necessary under this program, the CIMP will be revised to include appropriate procedures.

D-1.8.1 List of Laboratories Conducting Analysis

The chosen laboratories will be able to meet the measurement quality objectives set forth in **Table D-2** through **Table D-4**. Laboratories will meet California Environmental Laboratory Accreditation Program (ELAP) and/or National Environmental Laboratory Accreditation Program (NELAP) certifications and any data quality requirements specified in this document. Due to contracting procedures and solicitation requirements, qualified laboratories have not yet been selected to carry out the analytical responsibilities described in this CIMP. Selected laboratories will be listed along with lab certification information in **Table D-7**. Following the completion of the first monitoring year, the CIMP will be updated to include the pertinent laboratory specific information. At the end of all future monitoring years the ESGV Group will assess the laboratories performance and at that time a new laboratory may be chosen.

Table D-7.
Summary of Laboratories Conducting Analysis for the ESVG CIMP

Laboratory(1)	General Category of Analysis	Lab Certification No. & Expiration Date(2)

1. Information for all laboratories will be added to this table following their selection and upon CIMP update.

2. Lab certifications are renewed on an annual basis.

In the event that the laboratories selected to perform analyses for the CIMP are unable to fulfill data quality requirements outlined herein (e.g., due to instrument malfunction), alternate laboratories need to meet the same requirements that the primary labs have met. The original laboratory selected may recommend a qualified laboratory to act as a substitute. However, the final decision regarding alternate laboratory selection rests with the ESGV Group.

D-2 Sampling Method and Sample Handling

The following sections describe the steps to be taken to properly prepare for and initiate water quality sampling for the CIMP.

D-2.1 Monitoring Event Preparation

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps will be completed two weeks prior to each sampling event (a condensed timeline may be appropriate in storm events, which may need to be completed on short notice):

1. Contact laboratories to order sample containers and to coordinate sample transportation details.
2. Confirm scheduled monitoring date with field crew(s), and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment.
4. Prepare sample container labels and apply to bottles.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations and samples to be collected at each of the monitoring sites.
6. Verify that field measurement equipment is operating properly (i.e., check batteries, calibrate, etc.)

Table D-8 provides a checklist of field equipment to prepare prior to each monitoring event.

Table D-8.
Field Equipment Checklist

☐	Monitoring Plan
☐	Sample Containers plus Extras with Extra Lids
☐	Pre-Printed, Waterproof Labels (extra blank sheets)
☐	Event Summary Sheets
☐	Field Log Sheets
☐	Chain of Custody Forms
☐	Bubble Wrap
☐	Coolers with Ice
☐	Tape Measure
☐	Paper Towels or “Rags in a Box”
☐	Safety Equipment
☐	First Aid Kit
☐	Cellular Telephone
☐	Gate Keys
☐	Hip Waders
☐	Plastic Trash Bags
☐	Sealable Plastic Bags
☐	Grab Pole
☐	Clean Secondary Container(s)
☐	Field Measurement Equipment
☐	New Powder-Free Nitrile Gloves
☐	Writing Utensils
☐	Stop Watch
☐	Camera
☐	Blank Water

D-2.1.1 Bottle Order/ Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including quality control samples, as well as extra containers in case the need arises for intermediate containers or a replacement. The containers must be the proper type and size and contain preservative as appropriate for the specified laboratory analytical methods. **Table D-5** presents the proper container type, volume, and immediate processing and storage needs. The field crew must inventory sample containers upon receipt from the laboratory to ensure that adequate containers have been provided to meet analytical requirements for each monitoring event. After

each event, any bottles used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

D-2.1.2 Container Labeling and Sample Identification Scheme

All samples will be identified with a unique identification code to ensure that results are properly reported and interpreted. Samples will be identified such that the site, sampling location, matrix, sampling equipment and sample type (i.e., environmental sample or QC sample) can be distinguished by a data reviewer or user. Sample identification codes will consist of a site identification code, a matrix code, and a unique sample identification code. The format for sample identification codes is ESGV- ###.# - AAAA - XXX, where:

- ESGV indicates that the sample was collected as part of the ESGV CIMP.
- ###- identifies the sequentially numbered monitoring event, and the # is an optional indicator for re-samples collected for the same event. Sample events are numbered from 001 to 999 and will not be repeated.
- AAAA indicates the unique site ID for each site.
- XXX identifies the sample number unique to a sample bottle collected for a single event. Sample bottles are numbered sequentially from 001 to 999 and will not be repeated within a single event.

Custom bottle labels should be produced using blank waterproof labels and labeling software. This approach will allow the site and analytical constituent information to be entered in advance and printed as needed prior to each monitoring event. Labels will be placed on the appropriate bottles in a dry environment; applying labels to wet sample bottles should be avoided. Labels should be placed on sides of bottles rather than on bottle caps. All sample containers will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample containers simplifies field activities, leaving only sample collection time and date and field crew initials to be filled out in the field. Labels should include the following information:

Program Name	Date	Analytical Requirements
Station ID	Collection Time	Preservative Requirements
Sample ID	Sampling Personnel	Analytical Laboratory

D-2.1.3 Field Meter Calibration

Calibration of field measurement equipment is performed as described in the owner's manuals for each individual instrument. Each individual field crew will be responsible for calibrating their field measurement equipment. Field monitoring equipment must meet the requirements outlined in **Table D-1**and be calibrated before field events based on manufacturer guidance, but at a

minimum prior to each event. **Table D-9** outlines the typical field instrument calibration procedures for each piece of equipment requiring calibration. Each calibration will be documented on each event's calibration log sheet (presented in Appendix 1)

If calibration results do not meet manufacturer specifications, the field crew should first try to recalibrate using fresh aliquots of calibration solution. If recalibration is unsuccessful, new calibration solution should be used and/or maintenance should be performed. Each attempt should be recorded on the equipment calibration log. If the calibration results cannot meet manufacturer's specifications, the field crew should use a spare field measuring device that can be successfully calibrated. If a spare field measuring device that can be successfully calibrated is unavailable, field crews shall note the use of unsuccessfully calibrated equipment on each appropriate field log sheet. Additionally, the ESGV Group should be notified.

Calibration should be verified using at least one calibration fluid within the expected range of field measurements, both immediately following calibration and at the end of each monitoring day. Individual parameters should be recalibrated if the field meters do not measure a calibration fluid within the range of accuracy presented in **Table D-1**. Calibration verification documentation will be retained in the event's calibration verification log (presented in Appendix 1).

Table D-9.
Calibration of Field Measurement Equipment

Equipment / Instrument	Calibration and Verification Description	Frequency of Calibration	Frequency of Calibration Verification	Responsible Party
pH Probe	Calibration for pH measurement is accomplished using standard buffer solutions. Analysis of a mid-range buffer will be performed to verify successful calibration.	Day prior to 1st day or 1st day of sampling event	After calibration and at the end of each sampling day	Individual Sampling Crews
Temperature	Temperature calibration is factory-set and requires no subsequent calibration.			
Dissolved Oxygen Probe	Calibration for dissolved oxygen measurements is accomplished using a water saturated air environment. Dissolved oxygen (DO) measurement of water-saturated air will be performed and compared to a standard table of DO concentrations in water as a function of temperature and barometric pressure to verify successful calibration.			
Conductivity	Conductivity calibration will follow manufacturer's specifications. A mid-range conductivity standard will be analyzed to verify successful calibration.			
Turbidity	Turbidity calibration will follow manufacturer's specifications. A mid-range turbidity standard will be analyzed to verify successful calibration.			

D-2.1.4 Weather Conditions

Monitoring will occur during dry and wet conditions. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow or as defined by effective TMDLs within the watershed. As noted in the Metals TMDL, the 90th percentile flow measured at S14 is 1 cfs, dry weather conditions are operationally defined as where flow measured at the S14 station is less than 1 cfs. Wet weather conditions are defined in the MRP as when the receiving water body has flow that is at least 20 percent greater than its base flow or as defined by effective TMDLs within the watershed. Wet weather conditions for triggering storm events will be defined as a 70 percent probable forecast of greater than 0.25 inches of precipitation of rain where the preceding 72 hours of dry weather has less than 0.1 inches of rain. The Metals TMDL operationally defines wet-weather where flow at the USGS gage station 11085000 is equal or greater than 260 cfs. Compliance with wet-weather metals allocations will be determined from loading estimates where flows at USGS gage 1108500 are measured greater than 260 cfs.

Note that if rainfall begins after dry weather monitoring has been initiated, then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples during dry weather are consistent with similar programs within the region. However, to sufficiently characterize the receiving water during wet weather, composite samples will generally be used for wet weather sampling events. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli and oil and grease), situations where it is unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (autosampler) may not be warranted.

The MRP includes specific criteria for the time of monitoring events. With the exception of bacteria and metals monitoring, most constituents will be monitored during two dry weather monitoring events. For dry weather toxicity monitoring, sampling must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry weather monitoring event will take place during January unless sampling during another month is deemed to be preferable.

The first significant rain event of the storm year (first flush) will be monitored. The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

For a storm to be tracked, the first flush event will have a predicted rainfall of at least 0.25 inches with at least a 70 percent probability of rainfall 24 hours prior to the forecasted time of initial rainfall. Subsequent storm events must meet the tracking requirements, flow objectives, as well as be separated by a minimum of three days of dry weather. Antecedent conditions will be based on the LA County Department of Public Works (LACDPW) rain gage listed in **Table D-10**. The rain gage has been used to define wet and dry weather during TMDL monitoring in the watershed since 2009. Data can be obtained at http://dpw.lacounty.gov/wrd/Precip/index.cfm by clicking the ‘See Data’ link in the “Near Real-Time Precipitation Map” section. The web page displays a map showing real-time rainfall totals (in inches) for different rain gages. Although the default precipitation period is 24 hours, the user can view rainfall totals over different durations. Data from the rain gages is updated every 10 minutes.

Table D-10.
Real-Time Rain Gage Used to Define Weather Conditions for CIMP Monitoring[1]

Rainfall Gage	Operator	Gage Type	Latitude	Longitude
University of Southern California (USC) (375)	Los Angeles County Department of Public Works	Manually Observed Non-Mechanical Rain Gage	34.0226	-118.2908

1. Information for the gage can be found at http://dpw.lacounty.gov/wrd/Precip/alertlist.cfm.

The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River for at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from the same storm event.

For the purpose of triggering wet weather sampling preparation, field staff can estimate that any rainfall prediction for downtown Los Angeles of 0.1-0.5 inches in a 6- to 12-hour period would be sufficient to mobilize for wet weather sampling, or by utilizing the analyses of the CMP staff. The sampling crew should prepare to depart at the forecasted time of initial rainfall. The first of the four manual composite samples should be targeted for collection within 2 hours of local rainfall.

Publicly available meteorological forecasting systems are suggested for identifying and anticipating storm event sampling for the Study. The sampling decision protocol begins when the sampling crew recognizes an approaching storm, through weekly monitoring of forecasts. The National Weather Service’s weather forecast for downtown Los Angeles can be accessed on-line at:

http://www.wrh.noaa.gov/lox/ then click on “Los Angeles” on the area map

From the forecast page, the link to “Quantitative Precipitation Forecast” provides forecasted precipitation in inches for the next 24 hours, in 3-hour increments for the first 12 hours and in 6-hour increments for the last 12 hours.

D-2.1.5 Flow Gage Measurements

USGS flow gages along the San Gabriel River will be used to determine whether the receiving water flow has exceeded the 20 percent threshold. Flows above the 20 percent threshold will classify the receiving water body as being in “wet” conditions and flows that are less than the 20 percent threshold will be “dry” conditions. In addition to the USGS rain gages, field crews will monitor flow at each of the sampling sties. **Table D-11** presents the location of flow gages located on the San Gabriel River.

Table D-11.
SGR and Tributary Flow Gages

Water Body	Water Body Type	Gage Location	Gage ID
San Gabriel River	Main Stem	San Gabriel River Below Santa Fe Dam	SGRS

D-2.2 Sample Handling

Proper sampling handling ensures the samples will comply with the monitoring methods and analytical hold time and provides traceable documentation throughout the history of the sample.

D-2.2.1 Documentation Procedures

The ESGV Group is responsible for ensuring that each field sampling team adheres to proper custody and documentation procedures. Field log sheets documenting sample collection and other monitoring activities for each site will be bound in a separate master logbook for each event. Field personnel have the following responsibilities:

1. Keep an accurate written record of sample collection activities on the field log sheets.
2. Ensure that all field log sheet entries are legible and contain accurate and inclusive documentation of all field activities.
3. Note errors or changes using a single line to cross out the entry and date and initial the change.
4. Ensure that a label is affixed to each sample collected and that the labels uniquely identify samples with a sample ID, site ID, date and time of sample collection and the sampling crew initials.
5. Complete the chain of custody forms accurately and legibly.

D-2.2.2 Field Documentation/ Field Log

Field crews will keep a field log book for each sampling event that contains a calibration log sheet, a field log sheet for each site, and appropriate contact information. The following items should be recorded on the field log sheet for each sampling event:

- Monitoring station location (Station ID);
- Date and time(s) of sample collection;
- Name(s) of sampling personnel;
- Sample collection depth;
- Sample ID numbers and unique IDs for any replicate or blank samples;
- QC sample type (if appropriate);
- Requested analyses (specific parameters or method references);
- Sample type (e.g., grab or composite);
- The results of field measurements (e.g., flow, temperature, dissolved oxygen, pH, conductivity, turbidity) and the time that measurements were made;
- Qualitative descriptions of relevant water conditions (e.g., water color, flow level, clarity) or weather (e.g., wind, rain) at the time of sample collection;
- Trash observations (presence/absence);
- Observations of recreational activities;
- A description of any unusual occurrences associated with the sampling event, particularly those that may affect sample or data quality.

The field log will be scanned into a PDF within one week of the conclusion of each sampling event. Alternatively, all measurements could be collected on an electronic device such as laptop or tablet computer. Attachment 1 contains an example of the field log sheet

D-2.2.3 Sample Handling and Shipment

The field crews will have custody of samples during each monitoring event. Chain-of-custody (COC) forms will accompany all samples during shipment to contract laboratories to identify the shipment contents. All water quality samples will be transported to the analytical laboratory by the field crew or by courier. The original COC form will accompany the shipment, and a signed copy of the COC form will be sent, typically via fax, by the laboratory to the field crew to be retained in the project file.

While in the field, samples will be stored on ice in an insulated container. Samples that must be shipped to the laboratory must be examined to ensure that container lids are tight and placed on ice to maintain the appropriate temperature. The ice packed with samples must be approximately 2 inches deep at the top and bottom of the cooler, and must contact each sample to maintain temperature. The original COC form(s) will be double-bagged in re-sealable plastic bags and either taped to the outside of the cooler or to the inside lid. Samples must be shipped to the contract laboratory according to transportation standards. The method(s) of shipment, courier name, and other pertinent information should be entered in the "Received By" or "Remarks" section of the COC form.

Coolers must be sealed with packing tape before shipping, unless transported by field or lab personnel, and must not leak. It is assumed that samples in tape-sealed ice chests are secure whether being transported by common carrier or by commercial package delivery. The laboratory's sample receiving department will examine the shipment of samples for correct documentation, proper preservation and compliance with holding times. The following procedures are used to prevent bottle breakage and cross-contamination:

- Bubble wrap or foam pouches are used to keep glass bottles from contacting one another to prevent breakage, re-sealable bags will be used if available.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.
- If arrangements are not made in advance, the laboratory's sample receiving personnel must be notified prior to sample shipment.

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility of the personnel of each analytical laboratory to ensure that all applicable regulations are followed in the disposal of samples or related chemicals. Samples will be stored and transported as noted in **Table D-5**. Samples not analyzed locally will be sent on the same day that the sample collection process is completed, if possible. Samples will be delivered to the appropriate laboratory as will be indicated in **Table D-12**. Note that due to procurement procedures, the analytical laboratories have not been identified at this time. Information for all laboratories will be added to this table following their selection and upon CIMP update. Appropriate contacts will be listed along with lab certification information in **Table D-12**.

Table D-12.
Information on Laboratories Conducting Analysis for the ESGV CIMP

Laboratory[1]	General Category of Analysis	Shipping Method	Contact	Phone	Address	Lab Certification No. & Expiration Date[2]

1 Information for all laboratories will be added to this table following their selection and upon CIMP update.
2 Lab certifications are renewed on an annual basis.

D-2.2.4 Chain-of Custody Forms

Sample custody procedures provide a mechanism for documenting information related to sample collection and handling. Sample custody must be traceable from the time of sample collection until results are reported. A sample is considered under custody if:

- It is in actual possession
- It is in view after in physical possession
- It is placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession)

A COC form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation will be cross-checked to verify sample identification, type of analyses, number of containers, sample volume, preservatives, and type of containers. A complete COC form is to accompany the transfer of samples to the analyzing laboratory. A typical COC form is presented in Attachment 1.

D-2.2.5 Laboratory Custody Procedures

Laboratories will follow sample custody procedures as outlined in the laboratory's QA Manual. A copy of each contract laboratory's QA Manual should be available at the laboratory upon request. Laboratories shall maintain custody logs sufficient to track each sample submitted and to analyze or preserve each sample within specified holding times. The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedures;
- Verify sample preservation (e.g., temperature);
- Notify the ESGV Group if any problems or discrepancies are identified; and,
- Perform proper sample storage protocols, including daily refrigerator temperature monitoring and sample security.

Laboratories shall maintain records to document that the above procedures are followed. Once samples have been analyzed, samples will be stored at the laboratory for at least 30 days. After this period, samples may be disposed of properly.

D-2.3 Field Protocols

Briefly, the key aspects of quality control associated with field protocols for sample collection for eventual chemical and toxicological analyses are as follows:

1. Field personnel will be thoroughly trained in the proper use of sample collection gear and will be able to distinguish acceptable versus unacceptable water samples in accordance with pre-established criteria
2. Field personnel will be thoroughly trained to recognize and avoid potential sources of sample

contamination (e.g., engine exhaust, ice used for cooling)
3. Sampling gear and utensils which come in direct contact with the sample will be made of non-contaminating materials (e.g., borosilicate glass, high-quality stainless steel and/or Teflon™, according to protocol) and will be thoroughly cleaned between sampling stations according to appropriate cleaning protocol (rinsing thoroughly at minimum)
4. Sample containers will be of the recommended type and will be free of contaminants (i.e., pre-cleaned)
5. Conditions for sample collection, preservation, and holding times will be followed

Field crews will be comprised of two persons per crew, minimum. For safety reasons, sampling will occur during daylight hours, when possible. Sampling on weekends and holidays will also be avoided. Other constraints on sampling events include, but are not limited to, lab closures and toxicity testing organism availability. Sampling events should proceed in the following manner:

1. Before leaving the sampling crew base of operations, confirm number and type of sample containers as well as the complete equipment list
2. Proceed to the first sampling site
3. Fill-out the general information on the field log sheet
4. Collect the environmental and quality assurance/quality control (QA/QC) samples indicated on the event summary sheet and store samples appropriately. Using the field log sheet, confirm that all appropriate containers were filled
5. Collect field measurements and observations, and record these on the field log sheet
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining sampling sites
7. Complete the COC forms using the information on the field log sheets
8. After sample collection is completed, deliver and/or ship samples to appropriate laboratory

D-2.4 Sample collection

All samples will be collected in a manner appropriate for the specific analytical methods to be used. The proper sampling techniques, outlined in this section, will ensure that the collected samples are representative of the water bodies sampled. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

D-2.4.1 Overview of Sampling Techniques

As described below, the method used to collect water samples is dependent on the depth, flow, and sampling location (receiving water, outfall). Nonetheless, in all cases:

1. Throughout each sample collection event, the sampler should exercise aseptic techniques to avoid any contamination (i.e., do not touch the inner surfaces or lip edges of the sample bottle or cap).
2. The sampler should use clean, powder-free, nitrile gloves for each site to prevent contamination
3. When collecting the sample, the sampler should not breathe, sneeze, or cough in the direction of the container

4. Gloves should be changed if they are soiled, or if the potential for cross-contamination exists from handling sampling materials or samples
5. While the sample is collected, the bottle lid shall not be placed on the ground
6. The sampler should not eat or drink during sample collection
7. The sampler should not smoke during sample collection
8. Each person on the field crew should wear clean clothing that is free of dirt, grease, or other substances that could contaminate the sampling apparatus or sample bottles
9. Sampling should not occur near a running vehicle. Vehicles should not be parked within the immediate sample collection area, even non-running vehicles
10. When the sample is collected, ample air space should be left in the bottle to facilitate mixing by shaking for lab analysis, unless otherwise required by the method
11. After the sample is collected and the cap is tightly screwed back on the bottle, the time of sampling should be recorded on the field log sheet
12. Any QA/QC samples that are collected should be also be noted on the field log sheet and labeled according the convention described in **Section D-1**
13. Samples should be stored as previously described
14. COC forms should be filled out as described in **Section D-2.2.4** of this Attachment and delivered to the appropriate laboratory as soon as feasible to ensure hold times are met

To prevent contamination of samples, clean metal sampling techniques using USEPA protocols outlined in USEPA Method 1669[1] will be used throughout all phases of the water sample collection. The protocol for clean metal sampling, based on USEPA Method 1669, is summarized below:

1. Samples are collected in rigorously pre-cleaned sample bottles with any tubing specially processed to clean sampling standards
2. At least two persons, wearing clean, powder-free nitrile or latex gloves at all times, are required on a sampling crew
3. One person, referred to as “dirty hands”, opens only the outer bag of all double-bagged sample bottles
4. The other person, referred to as “clean hands”, reaches into the outer bag, opens the inner bag and removes the clean sample bottle
5. Clean hands rinses the bottle at least two times by submerging the bottle, removing the bottle lid, filling the bottle approximately one-third full, replacing the bottle lid, gently shaking and then emptying the bottle. Clean hands then collects the sample by submerging the bottle, removing the lid, filling the bottle and replacing the bottle cap while the bottle is still submerged
6. After the sample is collected, the sample bottle is double-bagged in the opposite order from which it was removed from the same double-bagging
7. Clean, powder-free gloves are changed whenever something not known to be clean has been touched

1 USEPA. April 1995. *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels.* EPA 821-R-95-034.

D-2.4.2 Field Measurements and Observations

Field measurements will be collected and observations made at each sampling site after a sample is collected. Field measurements will include the parameters identified in the CIMP for which a laboratory analysis is not being conducted. Field monitoring equipment must meet the requirements outlined in **Table D-4**. Field measurements for sediment samples shall be collected from within one meter of the sediment. All field measurement results and field observations will be recorded on a field log sheet similar to the one presented in Appendix 1 and as described in **Section D-2.2.4** of this Attachment.

Measurements (except for flow) will be collected at approximately mid-stream, mid-depth at the location of greatest flow (if feasible) with a Hydrolab DS4 multi-probe meter, or comparable instrument(s). If at any time the collection of field measurements by wading appears to be unsafe, field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge, or by using a telescoping pole and intermediate container to obtain a sample for field measurements and for filling sample containers. For situations where flows are not sufficiently deep to submerge the probes, an intermediate container will be utilized. The location of field measurements will be documented on the field log sheet.

Flow measurements will be collected as outlined in the following subsections at freshwater receiving water and non-stormwater outfall monitoring sites. Regardless of measurement technique used, if a staff gage is present the gage height will be noted. Field crews may not be able to measure flow at several sites during wet weather because of inaccessibility of the site. If this is the case, site inaccessibility will be documented on the field log sheet.

The field sampling crew has the primary responsibility for responding to failures in the sampling or measurement systems. Deviations from established monitoring protocols will be documented in the comment section of the field log sheet and noted in the post event summaries. If monitoring equipment fails, monitoring personnel will report the problem in the notes section of the field log sheet and will not record data values for the variables in question. Broken equipment will be replaced or repaired prior to the next field use. Data collected using faulty equipment will not be used.

A-1.1.1.1 *Shallow Sheet Flow Measurements*

If the depth of flow does not allow for the measurement of flow with a velocity meter (<0.1-foot) a "float" will be used to measure the velocity of the flowing water. The width, depth, velocity, cross section, and corresponding flow rate will be estimated as follows:

- **Sheet flow width:** The width (W) of the flowing water (not the entire part of the channel that is damp) is measured at the "top", "middle", and "bottom" of a marked-off distance – generally 10 feet (e.g., for a 10-foot marked-off section, W_{Top} is measured at 0-feet, W_{Mid}

is measured at 5 feet, and W_{Bottom} is measured at 10 feet).

- **Sheet flow depth:** The depth of the sheet flow is measured at the top, middle, and bottom of the marked-off distance. Specifically, the depth (D) of the sheet flow is measured at 25%, 50%, and 75% of the flowing width (e.g., $D_{50\%}^{Mid}$ is the depth of the water at middle of the section in the middle of the sheet flow) at each of the width measurement locations. It is assumed that the depth at the edge of the sheet flow (i.e., at 0% and 100% of the flowing width) is zero.

- **Representative cross-section:** Based on the collected depth and width measurements, the representative cross-sectional area across the marked-off sheet flow is approximated as follows:

$$\text{Re}\mathit{presentative\ Cross\ Section} =$$
$$Average\ \{[\frac{W_{Top}}{4}\times(\frac{D_{25\%}^{Top}}{2}+\frac{\left(D_{50\%}^{Top}+D_{25\%}^{Top}\right)}{2}+\frac{\left(D_{75\%}^{Top}+D_{50\%}^{Top}\right)}{2}+\frac{D_{75\%}^{Top}}{2})],$$
$$[\frac{W_{Mid}}{4}\times(\frac{D_{25\%}^{Mid}}{2}+\frac{\left(D_{50\%}^{Mid}+D_{25\%}^{Mid}\right)}{2}+\frac{\left(D_{75\%}^{Mid}+D_{50\%}^{Mid}\right)}{2}+\frac{D_{75\%}^{Mid}}{2})],$$
$$[\frac{W_{Bottom}}{4}\times(\frac{D_{25\%}^{Bottom}}{2}+\frac{\left(D_{50\%}^{Bottom}+D_{25\%}^{Bottom}\right)}{2}+\frac{\left(D_{75\%}^{Bottom}+D_{50\%}^{Bottom}\right)}{2}+\frac{D_{75\%}^{Bottom}}{2})]\}$$

- **Sheet flow velocity:** Velocity is calculated based on the amount of time it took a float to travel the marked-off distance (typically 10-feet or more). Floats are normally pieces of leaves, litter, or floatables (suds, etc.). The time it takes the float to travel the marked-off distance is measured at least three times. Then average velocity is calculated as follows:

$$Average\ Surface\ Velocity = \frac{Distance\ Marked\ off\ for\ Float\ Measurement}{Average\ Time\ for\ Float\ to\ Travel\ Marked\ off\ Distance}$$

- **Flow Rate calculation:** For sheet flows, based on the above measurements/estimates, the estimated flow rate, Q, is calculated by:

$$Q = f\ x\ (Representative\ Cross\ Section)\ x\ (Average\ Surface\ Velocity)$$

The coefficient f is used to account for friction effects of the channel bottom. That is, the float travels on the water surface, which is the most rapidly-traveling portion of the water column. The average velocity, not the surface velocity, determines the flow rate, and thus f is used to "convert" surface velocity to average velocity. In general, the value of f typically ranges from 0.60 – 0.90 (USGS 1982). Based on flow rate measurements taken during the LA River Bacteria Source Identification Study (CREST 2008) a value of 0.75 will be used for f.

A-1.1.1.2 ***Free-flowing Outfalls***

Some storm drain outfalls are free-flowing, meaning the runoff falls from an elevated outfall into the channel, which allows for collection of the entire flowing stream of water into a container of known volume (e.g., graduated bucket or graduated Ziploc bag). The time it takes to fill the known volume is measured using a stopwatch, and recorded on the field log. The time it takes to fill the container will be measured three times and averaged to ensure that the calculated discharge is representative. In some cases, a small portion of the runoff may flow around or under the container. For each measurement, "percent capture", or the proportion of flow estimated to enter the bucket, will be recorded. For free-flowing outfalls, the estimated flow rate, Q, is calculated by:

$$Q = Average\left[\frac{Filled\ \ container\ Volume}{(Time\ to\ Fill\ \ Container) \times (Estimated\ \ Capture)}\right]$$

Based on measurements of free-flowing outfalls during the LA River Bacteria Source Identification Study (CREST, 2008), estimated capture typically ranges from 0.75 – 1.0.

A-1.1.1.3 ***Sampling Techniques for the Collection of Water***

The following subsections provide details on the various techniques that can be utilized to collect water quality samples. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

A-1.1.1.4 ***Direct Submersion: Hand Technique***

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.

2. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid. In the case of mercury samples, remove the lid underwater to reduce the potential for contamination from the air.
3. Place the sample on ice.
4. Collect the remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.5 ***Intermediate Container Technique***

Samples may be collected with the use of a clean intermediate container, if necessary, following the steps listed below. An intermediate container may include a container that is similar in composition to the sample container, a pre-cleaned pitcher made of the same material as the sample container, or a Ziploc bag. An intermediate container should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill, and quickly transfer the sample into the individual sample container(s) and secure the lid(s).
3. Place the sample(s) on ice.
4. Collect remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

Some flows may be too shallow to fill a container without using an intermediate container. When collecting samples from shallow sheet flows it is very important to not scoop up algae, sediment, or other particulate matter on the bottom because such debris is not representative of flowing water. To prevent scooping up such debris either: (1) find a spot where the bottom is relatively clean and allow the sterile intermediate container to fill without scooping; or (2) lay a clean sterile Ziploc® bag on the bottom and collect the water sample from on top of the bag. A fresh Ziploc® bag must be used at each site.

A-1.1.1.6 ***Pumping***

Samples may be collected with the use of a peristaltic pump and specially cleaned tubing following the steps listed below. Sample tubing should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Attach pre-cleaned tubing into the pump, exercising caution to avoid allowing tubing ends to touch any surface known not to be clean. A separate length of clean tubing must be used at each sample location for which the pump is used.
3. Place one end of the tubing below the surface of the water. To the extent possible, avoid placing

the tubing near the bottom so that settled solids are not pumped into the sample container.

4. Hold the other end of the tubing over the opening of the sample container, exercising care not to touch the tubing to the sample container.
5. Pump the necessary sample volume into the sample container and secure the lid.
6. Place the sample on ice.
7. Collect remaining samples including quality control samples, if required, using the same protocols described above.
8. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.7 *Autosamplers*

Autosamplers are used to characterize the entire flow of a storm in one analysis. They can be programmed to take aliquots at either time- or flow-based specified intervals. Before beginning setup in the field, it is recommended to read the manufacturer's instructions. The general steps to set up the autosampler are described below:

1. Connect power source to autosampler computer. This can be in the form of a battery or a power cable.
2. Install pre-cleaned tubing into the pump. Clean tubing will be used at each site and for each event, in order to minimize contamination.
3. Attach strainer to intake end of the tubing and install in sampling channel.
4. If running flow based composite samples; install flow sensor in sampling channel and connect it to the automatic compositor.
5. Label and install composite bottle(s). If sampler is not refrigerated, then add enough ice to the composite bottle chamber to keep sample cold for the duration of sampling or until such time as ice can be refreshed. Make sure not to contaminate the inside of the composite bottle with any of the ice.
6. Program the autosampler as per the manufacturer's instructions and make sure the autosampler is powered and running before leaving the site.

After the sample collection is completed the following steps must be taken to ensure proper sample handling:

1. Upon returning to the site, check the status of the autosampler and record any errors or missed samples. Note on the field log the time of the last sample, as this will be used for filling out the COCs.
2. Remove the composite bottle and store on ice. If dissolved metals are required, then begin the sample filtration process outlined in the following subsection, within 15 minutes of the last composite sample, unless compositing must occur at another location, in which case the filtration process should occur as soon as possible upon sample compositing.
3. Power down autosampler and leave sampling site.
4. The composite sample will need to be split into the separate analysis bottles either before being shipped to the laboratory or at the laboratory. This is best done in a clean and weatherproof environment, using clean sampling technique.

A-1.1.1.8 *Dissolved Metals Field Filtration*

When feasible, samples for dissolved metals will be filtered in the field. The following describes an appropriate dissolved field filtration method. An alternative an equivalent method may be utilized, if necessary. A 50mL plastic syringe with a 0.45µm filter attached will be used to collect and filter the dissolved metals sample in the field. The apparatus will either come certified pre-cleaned from the manufacturer and confirmed by the analytical laboratory or be pre-cleaned by and confirmed by the analytical laboratory at least once per year. The apparatus will be double bagged in Ziploc plastic bags.

To collect the sample for dissolved metals, first collect the total metals sample using clean sampling techniques. The dissolved sample will be taken from this container. Immediately prior to collecting the dissolved sample, shake the total metals sample. To collect the dissolved metals sample using clean sampling techniques, remove the syringe from the bag and place the tip of the syringe into the bottle containing the total metals sample and draw up 50 mL of sample into the syringe. Next, remove the filter from the zip-lock bag and screw it tightly into the tip of the syringe. Then put the tip of the syringe with the filter into the clean dissolved metals container and push the sample through the filter taking care not to touch the inside surface of the sample container with the apparatus. The sample volume needs to be a minimum of 20 mL. If the filter becomes clogged prior to generating 20 mL of sample, remove and dispose of the used filter and replace it with a new clean filter (using the clean sampling techniques). Continue to filter the sample. When 20 mL has been collected, cap the sample bottle tightly and store on ice for delivery to the laboratory.

D-2.4.3 Receiving Water Sample Collection

A grab sample is a discrete individual sample. A composite sample is a mixture of samples collected over a period of time either as time or flow weighted. A time-weighted composite is created by mixing multiple aliquots collected at specified time intervals. A flow-weighted composite is created by mixing multiple aliquots collected at equal time intervals but where the volume of the aliquot is based on flow rate. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Should field crews feel that it is unsafe to collect samples for any reason, the field crews **SHOULD NOT COLLECT** a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

Grab samples will be used for dry weather sampling events, because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples will be collected as described in **Section D-2.4.1** of this Attachment. Monitoring site configuration and consideration of safety will dictate grab sample collection technique. The potential exists for monitoring sites to lack discernable flow. Except in the case of lakes, the lack of discernable flow may generate unrepresentative data. To address the potential confounding interference that can occur under such conditions, sites sampled should be assessed for the following conditions and sampled or not sampled accordingly:

- Pools of water with no flow or no visible connection to another surface water body should not be sampled. The field log should be completed for non-water quality data (including date and time of visit) and the site condition should be photo-documented.
- Flowing water (i.e., based on visual observations, flow measurements, and a photo-documented assessment of conditions immediately upstream and downstream of the sampling site) site should be sampled.

Wet weather samples will generally be collected as either time- or flow-weighted composites. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, situations where it is unsafe to collect composite samples or to perform investigative monitoring where composite sampling or installation of an autosampler may not be warranted.

It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.4 Stormwater Outfall Sample Collection

Stormwater outfalls will be monitored with similar methods as discussed in **Section D-2.4.3** of this Attachment. Sampling will not be undertaken if the outfalls are not flowing or if conditions exist where the receiving water is back-flowing into the outfall. It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.5 Non-Stormwater Outfall Screening Surveys and Sample Collection

The outfall screening process is designed to identify outfalls that have significant non-stormwater (non-stormwater) discharges. The collection of water quality data will support the determination of significant non-stormwater discharges as well as to characterize dry weather loading.

A-1.1.1.9 *Preparation for Outfall Surveys*

Preparation for outfall surveys includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps should be completed two weeks prior to each outfall survey:

1. Check weather reports and LACDPW rain gage to ensure that antecedent dry weather conditions are suitable.
2. Contact appropriate Flood Maintenance Division personnel from LACDPW to notify them of dates and times of any activities in flood control channels.
3. Contact laboratories to order bottles and to coordinate sample pick-ups.
4. Confirm scheduled sampling date with field crews.
5. Set-up sampling day itinerary including sample drop-offs and pick-ups.
6. Compile field equipment.
7. Prepare sample labels.
8. Prepare event summaries to indicate the type of field measurements, field observations, and samples to be taken at each of the outfalls.
9. Prepare COCs.
10. Charge the batteries of field tablets (if used).

A-1.1.1.10 *Non-Stormwater Sample Collection*

Water quality samples will be collected consistent with the dry weather requirements outlined in the receiving water monitoring section using the direct submersion, intermediate container, shallow sheet flow, or pumping methods described in **Section A-1.1.1.3** of this Attachment.

D-2.4.6 Stormborne Sediment Sampling

The Puddingstone Reservoir TMDLs and the Harbors Toxics TMDLs include requirements for the analysis of water quality samples to assess the contribution of certain organic pollutants associated with bulk sediment (**Table D-13**).

Table D-13.
Categories of Constituents for Assessing Sediment Concentrations in Water for the Puddingstone Reservoir and the Harbors Toxics TMDLs

General Category of Constituent	Harbors Toxics TMDLs	Puddingstone Reservoir TMDLs
Metals(1)	X	
DDTs(2)	X	X
Chlordanes(2)		X
Dieldrin		X
PCBs(2)	X	X
PAHs(2)	X	

1 Metals include copper, lead, silver, and zinc.
2 See **Table D-3** for a list of individual constituents in each category.

Most of the organochlorine (OC) pesticides and PCBs and many of the PAHs tend to strongly associate with sediment and organic material. These constituents commonly have octanol/water partition coefficients (log Kow) that are greater than six, elevated soil/water partition coefficients (log Kd) and elevated soil adsorption coefficients (log Koc). The lighter weight PAHs such as naphthalene, acenaphthene and acenaphthylene tend to be more soluble in water and volatile. Concentrations of OC pesticides, PCBs, and PAHs are often below or are very close to the limits of detection for conventional analytical methods used for analyzing water samples. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors.

Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Use of conventional analytical methods for analysis of the filtered sediment is then expected to require at least 5 grams of sediment (typically 10 grams is preferred by laboratories) for each of the groups of analytes (metals, OC pesticides, PCBs and PAHs) in order to achieve detection limits necessary to quantify loads. In addition, the direct impacts of filtering samples with high sediment content are not well understood. Efforts by the City of Los Angeles and Los Angeles County in the Ballona Creek and Marina del Rey watersheds, respectively, have demonstrated the challenges associated with collecting and analyzing suspended sediments. Assuming samples contain sediment at an average TSS concentration of 100 mg/L and that all sediment could be recovered, analyses might require as much as 50 liters for each test method (total of 200 liters). An ongoing special study is underway in Marina del Rey to evaluate various methods for capturing sufficient sediment to conduct analysis. In Ballona Creek, the City of Los Angeles has been successful in collecting sufficient volumes of sediment over the course of a year to conduct the analysis. This allows for the quantification of annual loading; however, it does not allow for an evaluation of concentrations and loads under various storm conditions. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted. In Ballona Creek, duplicate and quality control analysis have been limited to the available sediment, resulting in situations where either certain target constituents or quality control analysis are not completed.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668) and PAHs (CARB). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Conventional methods for analyzing for metals of interest are sufficiently sensitive to assess concentrations on suspended sediments. During the first three years, analyses will be conducted on whole water samples. These test methods provide detection limits that are roughly 100 times more sensitive than conventional analytical methods. In addition, these extremely low detection limits can be achieved with as little as 3-6 liters of stormwater.

Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in Los Angeles County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events. The approach contained herein provides the opportunity to quantify concentrations, and therefore loads, for each stormwater sampling event.

For purposes of load calculations, it would be assumed that 100% of OC pesticides, PCBs and PAHs were associated with suspended solids. Separate analyses of TSS/SSC would be used to normalize the data. After three years (approximately four to six storm events) the data will be reevaluated to assess whether continued use of the HRMS approach remains to be beneficial. If deemed necessary, a modified approach will be evaluated for analysis of filtered suspended sediments.

A-1.1.1.11 *Sampling and Analytical Procedures*

Stormwater samples for the Harbors Toxics TMDLs will be collected using autosamplers as described in **Section A-1.1.1.7**. Based on TSS measurements at one mass emission sites in LA County (**Table D-14**), use of a TSS concentration of 100 mg/L is expected to provide a conservative basis for estimating reporting limits for OC pesticides, PCBs, and PAHs in suspended sediments based upon 1-liter samples. However, two liters of storm water will be provided for each organic analytical suite for a total of six liters. An accurate measure of suspended sediments is critical to this sampling approach. TSS will be analyzed; however, SSC will be used as the standard for calculating the concentrations of target constituents in suspended sediments and total loads.

Since detection limits will depend upon the concentration of suspended sediment in the sample, the laboratory analyzing the suspended sediment concentrations will be asked to provide a rush analysis to provide information that can be used to direct processing of the samples for the organic compounds. If TSS/SSC are less than 150 mg/L, two liters will be extracted for subsequent HRMS analysis. If TSS concentrations are between 150 and 200 mg/L, one of the additional liter samples may be used to increase the volume of sample water for just PAHs or the additional liter may be used as a field duplicate for each analysis. If TSS concentrations are greater than 200 mg/L, the additional liter may be used as a field duplicate for each analysis. If the initial TSS sample indicates that sediment content is less than 50 mg/L, additional measures will be taken to improve PAH reporting limits with respect to suspended sediment loads. A field duplicate from one site will be analyzed if adequate sample volumes are obtained.

Target reporting limits (**Table D-15** and **Table D-16**) were established based upon bed sediment reporting limits listed in the Coordinated Compliance and Reporting Plan for the Greater Los Angeles and Long Beach Harbor Waters (Anchor QEA, 2013). **Table D-15** and **Table D-16** provide a summary of the detection limits attainable in water samples using HRMS analytical methods. Estimated detection limits are provided for concentrations of the target constituents in suspended sediments given the assumption that suspended sediment content of the water sample is 100 mg/L and that 100 percent of the target constituents are associated with the suspended sediment. This provides a conservative assumption with respect to evaluating the potential impacts of concentrations of OC pesticides, PCBs, and PAHs in suspended sediment on concentrations in bed sediment. Additionally, **Table D-15** and **Table D-16** present relevant TMDL targets and reporting limits suggested in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009). The following summarizes a comparison between the estimated detection limits for OC pesticides, PCBs, and PAHs in the suspended sediments to target reporting limits:

- For OC pesticides (**Table D-15**), estimated detection limits in the suspended sediment are at or below TMDL targets limits for bed sediments, except for dieldrin. The dieldrin estimated detection limit is above the lowest TMDL target, but not the remaining TMDL targets, and is below observed concentrations reported in the TMDL staff reports. Additionally, estimated detection limits in the suspended sediment are below target bed sediment reporting limits for this CIMP and target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009), except for dieldrin. Dieldrin is above the bed sediment reporting limit in this CIMP, but below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).

- For PCBs (**Table D-15**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Additionally, estimated detection limits in the suspended sediment are at or below target bed sediment reporting limits for this CIMP and below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).
- For PAHs (**Table D-16**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Most individual PAH compounds would be expected to be detectable in the suspended sediment at concentrations about 2.5 times greater that the target bed sediment reporting limits for this CIMP and the target reporting limits presented in the SWAMP QAPP (SWRCB, 2008). Approximately half of the individual PAH compounds are above the target reporting limits presented in the SQO Technical Support Manual (SCCWRP, 2009), while the other half are below. Two compounds, naphthalene and phenanthrene, would have detection limits roughly 6 times the target bed sediment reporting limits for this CIMP. Naphthalene is an extremely light weight PAH that is not considered a major analyte of concern in storm water.

As noted previously, metals of interest are quantifiable with standard analytical methods. Detection limits for trace metals (**Table D-2**) are suitable for calculation of concentrations in suspended solids and the concentration of trace metals associated with the particulate fraction will be calculated as:

$$C_P=C_T-C_D$$

where C_T =Concentration of total recoverable metals

C_D =Concentration of dissolved fraction

C_P =Concentration of the particulate fraction

USEPA's guidance document for development of metals translators (EPA, 1996) uses the same approach for calculation of the trace metals in the particulate fraction.

In summary, all but one of the target reporting limits are below relevant TMDL targets and the overwhelming majority are below bed sediment reporting limits identified in this CIMP and the SWAMP QAPP (SWRCB, 2008) and SQO Technical Support Manual (SCCWRP, 2009). The approach to analyzing whole water samples to estimate concentrations of target pollutants on bed sediment provides an opportunity to improve the understanding of loads during multiple storms each year.

Table D-14.
Summary of Median TSS Measurements (mg/L)
at the San Gabriel River Mass Emission Site

Waterbody	LA County Monitoring Site ID	Median
San Gabriel River	S14	113

Table D-15.
Recommended Methods, Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for Organochlorine Pesticides and Total PCBs

Constituent and Analytical Method	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2008) Reporting Limit	SQO Technical Support Manual (2009) Reporting Limit	Harbors Toxics TMDL Sediment Target (Indirect Effects)	Harbors Toxics TMDL Sediment Target (Direct Effects)	Puddingstone Reservoir Sediment Target (Indirect Effects)
	pg/L	ng/g – dry wt						
Chlordane Compounds (EPA 1699)								
alpha-Chlordane	40	0.4	0.5	1	0.5	1.3 (Total Chlordane)	0.5 (Total Chlordane)	0.75 (Total Chlordane)
gamma-Chlordane	40	0.4	0.5	1	0.54			
Oxychlordane	40	0.4	0.5	1	NA			
trans-Nonachlor	40	0.4	0.5	1	4.6			
cis-Nonachlor	40	0.4	0.5	2	NA			
Other OC Pesticides (EPA 1699)								
2,4'-DDD	40	0.4	0.5	2	0.5	1.9 (Total DDT)	1.58 (Total DDT)	3.94 (Total DDT)
2,4'-DDE	80	0.4	0.5	2	0.5			
2,4'-DDT	80	0.4	0.5	3	0.5			
4,4'-DDD	40	0.4	0.5	2	0.5			
4,4'-DDE	80	0.4	0.5	2	0.5			
4,4'-DDT	80	0.4	0.5	5	0.5			
Total DDT	80	0.4	---	---	0.5			
Dieldrin	40	0.4	0.02	2	2.7	NA	0.02	0.22
Total PCBs (EPA 1668)	5-20	0.05-0.2	0.2	0.2	3.0	3.2	22.7	0.59

1 Water MLs based upon 1 liter of water.

2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

3 Target is for the summed value of the individual constituents and is not specific to each constituent species.

NA Not applicable

Table D-16.
Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for PAHs

Constituent	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2009) Reporting Limit	SQO Technical Support Manual Reporting Limit	Harbors Toxics TMDL Sediment Target (Direct Effects)
	pg/L	ng/g – dry wt				
1-Methylnaphthalene	5	50	20	20	20	552 (Low Weight) (3) 1700 (High Weight) (3) 4700 (Total PAHs)
1-Methylphenanthrene	5	50	20	20	20	
2-Methylnaphthalene	5	50	20	20	20	
2,6-Dimethylnaphthalene	5	50	20	20	20	
Acenaphthene	5	50	20	20	20	
Anthracene	5	50	20	20	20	
Benzo(a)anthracene	5	50	20	20	80	
Benzo(a)pyrene	5	50	20	20	80	
Benzo(e)pyrene	5	50	20	20	80	
Biphenyl	5	50	20	20	20	
Chrysene	5	50	20	20	80	
Dibenz(a,h)anthracene	5	50	20	20	80	
Fluoranthene	5	50	20	20	80	
Fluorene	5	50	20	20	20	
Naphthalene	12.5	125	20	20	20	
Perylene	5	50	20	20	80	
Phenanthrene	12.5	125	20	20	20	
Pyrene	5	50	20	20	80	

1 Water MLs based upon 1 liter of water and CARB 429m. Detection limits are based upon a final extract of 500 µL. If the SSC is low, either an additional liter of water can be extracted to halve the detection limit or the final extract volume can be reduced. Depending on sample characteristics, the extract volume can be reduced to as little as 50-100 µL which would drop MLs by a factor of 0.1 to 0.2 times the listed ML.

2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

2 *Low Molecular Weight PAHs* Low weight PAHs include Acenaphthene, Anthracene, Phenanthrene, Biphenyl, Naphthalene, 2,6-dimethylnaphthalene, Fluorene, 1-methylnaphthalene, 2-methylnaphthalene, 1-methylphenanthrene, *High Molecular Weight PAHs:* Benzo(a)anthracene, Benzo(a)pyrene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Perylene, Pyrene.

NA Not applicable

D-3 Quality Control Sample Collection

Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. Detailed descriptions of quality control samples are presented in **Section D-3.1** of this Attachment.

D-3.1 Quality Assurance/Quality Control

This section describes the quality assurance and quality control requirements and processes. Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. There are no requirements for quality control for field analysis of general parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and pH) outlined in SWAMP guidance documents. However, field crews will be required to calibrate equipment as outlined in **Section D-2** of this Attachment. **Table D-17** presents the quality assurance parameter addressed by each quality assurance requirement as well as the appropriate corrective action if the acceptance limit is exceeded.

Table D-17.
Quality Control Requirements

Quality Control Sample Type	QA Parameter	Frequency(1)	Acceptance Limits	Corrective Action
Quality Control Requirements – Field				
Equipment Blanks	Contamination	5% of all samples(2)	< MDL	Identify equipment contamination source. Qualify data as needed.
Field Blank	Contamination	5% of all samples	< MDL	Examine field log. Identify contamination source. Qualify data as needed.
Field Duplicate	Precision	5% of all samples	RPD < 25% if |Difference| > RL	Reanalyze both samples if possible. Identify variability source. Qualify data as needed.
Quality Control Requirements – Laboratory				
Method Blank	Contamination	1 per analytical batch	< MDL	Identify contamination source. Reanalyze method blank and all samples in batch. Qualify data as needed.
Lab Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Recalibrate and reanalyze.
Matrix Spike	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides (3)	Check LCS/CRM recovery. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Matrix Spike Duplicate	Precision	1 per analytical batch	RPD < 30% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Laboratory Control Sample (or CRM or Blank Spike)	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides (3)	Recalibrate and reanalyze LCS/ CRM and samples.
Blank Spike Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Surrogate Spike (Organics Only)	Accuracy	Each environmental and lab QC sample	30-150% Recovery3	Check surrogate recovery in LCS. Attempt to correct matrix problem and reanalyze sample. Qualify data as needed.

MDL = Method Detection Limit RL = Reporting Limit RPD = Relative Percent Difference
LCS = Laboratory Control Sample/Standard CRM = Certified/ Standard Reference Material

GWQC = General Water Quality Constituents

1. "Analytical batch" refers to a number of samples (not to exceed 20 environmental samples plus the associated quality control samples) that are similar in matrix type and processed/prepared together under the same conditions and same reagents (equivalent to preparation batch).

3. Equipment blanks will be collected by the field crew before using the equipment to collect sample.
4. Or control limits set at + 3 standard deviations based on actual laboratory data.

D-3.2 QA/QC Requirements and Objectives

D-3.2.1 Comparability

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. For this monitoring program, this objective will be ensured mainly through use of standardized procedures for field measurements, sample collection, sample preparation, laboratory analysis, and site selection; adherence to quality assurance protocols and holding times; and reporting in standard units. Additionally, comparability of analytical data will be addressed through the use of standard operating procedures and extensive analyst training at the analyzing laboratory.

D-3.2.2 Representativeness

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. For the CIMP, this objective will be addressed by the overall design of the program. Representativeness is attained through the selection of sampling locations, methods, and frequencies for each parameter of interest, and by maintaining the integrity of each sample after collection. Sampling locations were chosen that are representative of various areas within the watershed and discharges from the MS4, which will allow for the characterization of the watershed and impacts MS4 discharges may have on water quality.

D-3.2.3 Completeness

Data completeness is a measure of the amount of successfully collected and validated data relative to the amount of data planned to be collected for the project. It is usually expressed as a percentage value. A project objective for percent completeness is typically based on the percentage of the data needed for the program or study to reach valid conclusions.

Because the CIMP is intended to be a long term monitoring program, data that are not successfully collected during a specific sample event will not be recollected at a later date. Rather subsequent events conducted over the course of the monitoring will provide robust data sets to appropriately characterize conditions at individual sampling sites and the watershed in general. For this reason, most of the data planned for collection cannot be considered absolutely critical, and it is difficult to set a meaningful objective for data completeness.

However, some reasonable objectives for data are desirable, if only to measure the effectiveness of the program when conditions allow for the collection of samples (i.e., flow is present). The program goals for data completeness, shown in **Table D-4**, are based on the planned sampling frequency, SWAMP recommendations, and a subjective determination of the relative importance of the monitoring element within the CIMP. If, however, sampling sites do not allow for the collection of enough samples to provide representative data due to conditions (i.e., no flow) alternate sites will be considered. Data completeness will be evaluated on a yearly basis.

D-3.3 QA/QC Field Procedures

Quality control samples to be prepared in the field will consist of equipment blanks, field blanks, and field duplicates as described below.

D-3.3.1 Equipment Blanks

The purpose of analyzing equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment and analyzed for relevant pollutants before sending the equipment to the field crew. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The equipment blanks will be analyzed using the same analytical methods specified for environmental samples. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

D-3.3.2 Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Per the Quality Assurance Management Plan for SWAMP (SWRCB, 2008) field blanks are to be collected as follows:

- At a frequency of 5% of samples collected for the following constituents: trace metals in water (including mercury), VOC samples in water and sediment, DOC samples in water, and bacteria samples.
- Field blanks for other media and analytes should be conducted upon initiation of sampling, and if field blank performance is acceptable (as described in **Table D-17**), further collection and analysis of field blanks for these other media and analytes need only be performed on an as-needed basis, or during field performance audits. An as-needed basis for the ESGV CIMP will be annually.

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Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples.

If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.3.3 Field Duplicates

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples, and analyzed along with the associated environmental samples. Field duplicates will consist of two grab samples collected simultaneously, to the extent practicable. If the Relative Percent Difference (RPD) of field duplicate results is greater than the percentage stated in **Table D-17** and the absolute difference is greater than the RL, both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.4 QA/QC Laboratory Analyses

Quality control samples prepared in the laboratory will consist of method blanks, laboratory duplicates, matrix spikes/duplicates, laboratory control samples (standard reference materials), and toxicity quality controls.

D-3.4.1 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be corrected, and the associated samples should be reanalyzed.

D-3.4.2 Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of duplicate laboratory fortified method blanks. If the RPD for any analyte is greater than the percentage stated in **Table D-17** and the absolute difference between duplicates is greater than the RL, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and laboratory duplicates should be reanalyzed.

D-3.4.3 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

D-3.4.4 Laboratory Control Samples

The purpose of analyzing laboratory control samples (or a standard reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory fortified method blanks or a standard reference material. If recovery of any analyte is outside the acceptable range, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and the laboratory control sample should be reanalyzed.

D-3.4.5 Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated or isotopically labeled compounds that are not usually present in environmental media. Results are expressed as percent recovery of the surrogate spike. Surrogate spikes are applicable for analysis of PCBs and pesticides.

D-3.4.6 Toxicity Quality Control

For aquatic toxicity tests, the acceptability of test results is determined primarily by performance-based criteria for test organisms, culture and test conditions, and the results of

control bioassays. Control bioassays include monthly reference toxicant testing. Test acceptability requirements are documented in the method documents for each bioassay method.

D-4 Instrument/Equipment Calibration and Frequency

Frequencies and procedures for calibration of analytical equipment used by each contract laboratory are documented in the QA Manual for each laboratory. Any deficiencies in analytical equipment calibration should be managed in accordance with the QA Manual for each contract laboratory. Any deficiencies that affect analysis of samples submitted through this program must be reported to the ESGV Group. Laboratory QA Manuals are available for review at the analyzing laboratory.

D-5 Data Management

Section D-5 details the procedures for managing and reporting data meet the goals and objectives of the CIMP and in turn the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful data management and reporting.

D-5.1 Data Review, Verification, and Validation Requirements

The acceptability of data is determined through data verification and data validation. Both processes are discussed in detail below. In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the contract laboratory's QA Manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory's QA Officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Appendix 2 provides equations that are used to calculate precision, accuracy, and completeness of the data. Decisions to reject or qualify data will be made by the ESGV Group, based on the evaluation of field and laboratory quality control data, according to procedures outlined in Section 13 of Caltrans document No. CTSW-RT-00-005, Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition (LWA, 2000). Section 13 of the Caltrans Guidance Manual is included as Appendix 3.

D-5.1.1 Data Verification

Data verification involves verifying that required methods and procedures have been followed at all stages of the data collection process, including sample collection, sample receipt, sample preparation, sample analysis, and documentation review for completeness. Verified data have been checked for a variety of factors, including transcription errors, correct application of dilution factors, appropriate reporting of dry weight versus wet weight results, and correct

application of conversion factors. Verification of data may also include laboratory qualifiers, if assigned.

Data verification should occur in the field and the laboratory at each level (i.e., all personnel should verify their own work) and as information is passed from one level to the next (i.e., supervisors should verify the information produced by their staff). Records commonly examined during the verification process include field and sample collection logs, COC forms, sample preparation logs, instrument logs, raw data, and calculation worksheets.

In addition, laboratory personnel will verify that the measurement process was "in control" (i.e., all specified data quality objectives were met or acceptable deviations explained) for each batch of samples before proceeding with the analysis of a subsequent batch. Each laboratory will also establish a system for detecting and reducing transcription and/or calculation errors prior to reporting data.

D-5.1.2 Data Validation

In general, data validation involves identifying project requirements, obtaining the documents and records produced during data verification, evaluating the quality of the data generated, and determining whether project requirements were met. The main focus of data validation is determining data quality in terms of accomplishment of measurement quality objectives (i.e., meeting QC acceptance criteria). Data quality indicators, such as precision, accuracy, sensitivity, representativeness, and completeness, are typically used as expressions of data quality. The ESGV Group, will review verified sample results for the data set as a whole, including laboratory qualifiers, summarize data and QC deficiencies and evaluate the impact on overall data quality, assign data validation qualifiers as necessary, and prepare an analytical data validation report. The validation process applies to both field and laboratory data.

In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the analyzing laboratory's QA Manual will be used to accept, reject, or qualify the data generated. The laboratory will only submit data that have met data quality objectives, or data that have acceptable deviations explained. When QC requirements have not been met, the samples will be reanalyzed when possible, and only the results of the reanalysis will be submitted, provided that they are acceptable. Each laboratory's QA Officer is responsible for validating the data it generates.

D-5.1.3 Data Management

Analytical Data Reports will be sent to and kept by the ESGV Group. Each type of report will be stored separately and ordered chronologically. The field crew shall retain the original field logs. The contract laboratory shall retain original COC forms. The contract laboratory will retain copies of the preliminary and final data reports. Concentrations of all parameters will be

calculated as described in the laboratory SOPs or referenced method document for each analyte or parameter.

The field log and analytical data generated will be converted to a standard database format maintained on personal computers. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the final database.

D-6 Reporting

The MRP includes a number of reporting requirements to summarize CIMP implementation efforts, the data collected as part of the CIMP, as well as to report on implementation of the Permit requirements as a whole. The following sections detail monitoring and reporting requirements outlined in the MRP and provides information on how the water, sediment, and tissue data collected as part of this CIMP data are to be used.

D-6.1 Semi-Annual Analytical Data Reports

As required by Part XIV.L of the MRP, results from each of the receiving water or outfall based monitoring stations conducted in accordance with the SOP shall be sent electronically to the Regional Board's Stormwater site at MS4stormwaterRB4@waterboards.ca.gov. The monitoring results will be submitted on a semi-annual basis and will highlight exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds. Corresponding sample dates and monitoring locations will be included. Data will be transmitted in the most recent Southern California SMC's Standardized Data Transfer Formats. Reports of monitoring activities will include, at a minimum, the following information (records of which are required by Part XIV.A.1.c of the MRP):

1. The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
2. The individual(s) who performed the sampling or measurements.
3. The date(s) analyses were performed.
4. The individual(s) who performed the analyses.
5. The analytical techniques or methods used.
6. The results of such analyses.
7. The data sheets showing toxicity test results.

D-6.2 Annual Monitoring Reports

As outlined in Part XVI.A of the MRP, the annual reporting process is intended to provide the Regional Board with summary information to allow for the assessment of the Permittee's:

1. Participation in one or more Watershed Management Programs.
2. Impact of each Permittee(s) stormwater and non-stormwater discharges on the receiving water.
3. Each permittee's compliance with RWLs, numeric WQBELs, and non-stormwater action levels.
4. The effectiveness of each Permittee(s) control measures in reducing discharges of pollutants from the MS4 to receiving waters.
5. Whether the quality of MS4 discharges and the health of receiving waters is improving, staying the same, or declining as a result of watershed management program efforts, and/or TMDL implementation measures, or other MCMs.
6. Whether changes in water quality can be attributed to pollutant controls imposed on new development, re-development, or retrofit projects.

The annual report process also seeks to provide a forum for Permittee(s) to discuss the effectiveness of its past and ongoing control measure efforts and to convey its plans for future control measures. Detailed data and information will also be provided in a clear and transparent fashion to allow the Regional Board and the general public to review and verify conclusions presented by the Permittee. Annual reports shall be organized to include the information as described in the following subsections.

D-6.3 Watershed Summary Information

According to Section XVII.B of the MRP, Permittees shall include the information requested in MRP Section XVII.B parts A.1 through A.3 in its odd year Annual Report (e.g., Year 1, 3, 5). The requested information shall be provided for each watershed within the Permittee's jurisdiction. Alternatively, Permittees participating in a WMP may provide the requested information through the development and submission of a WMP plan and any updates. As the ULARWMG is submitting an WMP the information is not required as a separate submittal. However, updates to information requested in Section XVII.B parts A.1 through A.3 (presented in **Sections D-6.3.1** through **D-6.3.3** below) will be noted in WMP plan updates.

D-6.3.1 Watershed Management Area

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for baseline information regarding the following watershed management area details:

1. The effective TMDLs, applicable WQBELs and RWLs, and implementation and reporting requirements, and compliance dates.
2. CWA section 303(d) listings of impaired waters not addressed by TMDLs.
3. Results of regional bioassessment monitoring.

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4. A description of known hydromodificaitons to receiving waters and a description, including locations, of natural drainage systems.

5. Description of groundwater recharge areas including number and acres.

6. Maps and/or aerial photographs identifying the location of Environmentally Sensitive Areas (ESAs), Areas of Special Biological Significance (ASBS), natural drainage systems, and groundwater recharge areas.

D-6.3.2 Subwatershed (HUC-12) Descriptions

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the following Subwatershed (twelve digit Hydrologic Unit Code or HUC-12) descriptions:

1. Description including HUC-12 number, name and a list of all tributaries named in the Basin Plan.

2. Land use map of the HUC-12 watershed.

3. 85th percentile, 24-hour rainfall isohyetal map for the subwatershed.

4. One-year, one-hour storm intensity isohyetal map for the subwatershed.

5. MS4 map for the subwatershed, including major MS4 ourfalls and all low-flow diversions.

D-6.3.3 Description of Permittee(s) Drainage Area within the Subwatershed

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the Drainage Area within the subwatershed:

1. A subwatershed map depicting the Permittee(s) jurisdictional area and the MS4, including major outfalls (with identification numbers), and low flow diversions located within the Permittee(s) jurisdictional area.

2. Provide the estimated baseline percent of effective impervious area (EIA) within the Permitte(s) jurisdictional area.

D-6.3.4 Annual Assessment and Reporting

The following sections will be included in the ULARWMA Annual Report to meet the MRP requirements. The Annual Report will clearly identify all data collected and strategies, control measures, and assessments implemented by each Permittee within the ULARWMA, as well as those implemented by multiple Permittees on a watershed scale.

Stormwater Control Measures

All reasonable efforts will be made to determine, compile, analyze, and summarize the following information for each Permittee:

1. Estimated cumulative change in percent EIA since the effective date of the Order, and if possible, the estimated change in the stormwater runoff volume during the 85th percentile storm event.

2. Summary of New Development/Re-Development Projects constructed within the Permittee(s) jurisdictional area during the reporting year.

3. Summary of Retrofit Projects that reduced or disconnected impervious area from MS4 during the reporting year.

4. Summary of other projects designed to intercept stormwater runoff prior to discharge to the MS4 during the reporting year.

5. Estimate the total runoff volume retained on site by the implementation of such projects during the reporting year.

6. Summary of actions taken in compliance with TMDL implementation plans or approved WMP to implement TMDL provisions.

7. Summary of riparian buffer/wetland restoration projects completed during the reporting year. For riparian buffers include width, length and vegetation type; for wetland include acres restored, enhanced, or created.

8. Summary of other MCMs implemented during the reporting year, as the Permittee deems relevant.

9. Status of all multi-year efforts that were not completed in the current year and will therefore continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee(s) will provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

Effectiveness Assessment of Stormwater Control Measures

The following information will be included to detail Stormwater Control Measures during the reporting year:

1. Rainfall summary for the reporting year, including the number of storm events, highest volume event (inches/24 hours), highest number of consecutive days with measurable rainfall, total rainfall during the reporting year compared to average annual rainfall for the WMP area.

2. A summary table describing rainfall during stormwater outfall and wet-weather receiving water monitoring events. The summary description will include the date, time that the storm commenced and the storm duration in hours, the highest 15-minute recorded storm intensity (converted to inches/hour), the total storm volume (inches), and the time between the storm event sampled and the end of the previous storm event.

3. Where control measures were designed to reduce impervious cover or stormwater peak flow and flow duration, hydrographs or flow data of pre- and post-control activity for the 85th percentile, 24-hour rain event, if available.

4. For natural drainage systems, a reference watershed flow duration curve and comparison to a

flow duration curve for the WMP area under current conditions.

5. An assessment as to whether the quality of stormwater discharges as measured at designed outfalls is improving, staying the same, or declining. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, or other means may be used to develop and support the assessment's conclusions.

6. An assessment as to whether wet-weather receiving water quality is improving, staying the same or declining, when normalized for variations in rainfall patterns. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.

7. Status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factors(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Non-stormwater Water Control Measures

The following information will be included to detail non-stormwater control measures:

1. An estimation of the number of major outfalls within the WMP area.

2. The number of outfalls that were screened for significant non-stormwater discharges during the reporting year.

3. The cumulative number of outfalls that have been screened for significant non-stormwater discharges since the date the Permit was adopted through the reporting year.

4. The number of outfalls with confirmed significant non-stormwater discharge.

5. The number of outfalls where significant non-stormwater discharge was attributed to other NPDES permitted discharges; other authorized non-stormwater discharges; or conditionally exempt discharges.

6. The number of outfalls where significant non-stormwater discharges were abated as a result of the WMP Group actions.

7. The number of outfalls where non-stormwater discharges was monitored.

8. The status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Effectiveness Assessment of Non-Stormwater Control Measures

The following information will be included to assess non-stormwater control measures effectiveness:

1. An assessment as to whether receiving water quality within the WMP area is impaired, improving, staying the same or declining during the dry-weather conditions. Water quality data from the reporting year to previous years with similar dry-weather flows may be compared, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.

2. An assessment of the effectiveness of the control measures in effectively prohibiting non-stormwater discharges through the MS4 to the receiving water.

3. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Integrated Monitoring Compliance Report

The following information will be included to assess the Permittee(s) compliance with applicable TMDLs, WQBELs, RWLs, and action levels:

1. An Integrated Monitoring Report that summarizes all identified exceedances of the following against applicable RWLs, WQBELs, non-stormwater action levels, and aquatic toxicity thresholds:

    a. Outfall-based stormwater monitoring data

    b. Wet weather receiving water monitoring data

    c. Dry weather receiving water data

    d. NSW outfall monitoring data

    All sample results that exceeded one more applicable thresholds shall be readily identified.

2. If aquatic toxicity was confirmed and a TIE was conducted, the toxic chemicals, as determined by the TIE, will be identified. All relevant data to allow the Regional Board to review the adequacy and findings of the TIE will be included. This shall include, but not be limited to:

    a. The sample(s) date

    b. Sample(s) start and end time

    c. Sample type(s)

    d. Sample location(s) as depicted on a map

    e. The parameters, analytical results, and applicable limitation.

3. A description of efforts that were taken to mitigate and/or eliminate all non-stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.

4. A description of efforts that were taken to address stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.

5. Where RWLs were exceeded, provide a description of efforts that were taken to determine whether discharges from the MS4 caused or contributed to the exceedances and all efforts that

were taken to control the discharge of pollutants from the MS4 to those receiving waters in response to the exceedances.

Adaptive Management Strategies

The following information will be included to outline Adaptive Management Strategies:

1. The most effective control measures, why the measures were effective, and how other measures will be optimized based on past experiences.
2. The least effective control measures, why the measures were deemed ineffective, and how the controls measures will be modified or terminated.
3. Significant changes to control measures during the prior year and the rationale for the changes.
4. All significant changes to control measures anticipated to be made next year and rationale for the changes. Those changes requiring approval of the Regional Board or its Executive Officer will be clearly identified at the beginning of the Annual Report.
5. A detailed description of control measures to be applied to New Development or Re-development projects disturbing more than 50 acres.
6. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Supporting Data and Information

All monitoring data and associated meta-data used to prepare the Annual Report will be summarized in an MS Excel© spreadsheet and sorted by monitoring station/outfall identifier linked to the WMP area map. The data summary will include the date, sample type (flow-weighted composite, grab, field measurement), sample start and stop times, parameter, analytical method, value, and units. The date field will be linked to a database summarizing the weather data for the sampling date including 24-hour rainfall, rainfall intensity, and days since the previous rain event.

D-6.4 Signatory and Certification Requirements

All applications, reports, or information submitted to the Regional Board, State Board, and/or USEPA will be signed and certified as follows:

1. All applications submitted to the Regional Board shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer includes: (i) the chief executive officer of the agency (e.g., Mayor), or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., City Manager, Director of Public Works, City Engineer, etc.).
2. All reports required by the Permit and other information requested by the Regional Board, State Board, or USEPA shall be signed by either a principal executive officer or ranking elected official or by a duly authorized representative of a principal executive officer or ranking elected official. A

person is a duly authorized representative only if:

a. The authorization is made in writing by a principal executive officer or ranking elected official.

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

c. The written authorization is submitted to the Regional Board.

3. If an authorization of a duly authorized representative is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization will be submitted to the Regional Board prior to or together with any reports, information, or applications, to be signed by an authorized representative.

4. The following certification will be made by any person signing an application or report:

   "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."

D-6.5 Use of Submitted Data

As stated in Part II.A.2 of the MRP, a Primary Objective of the Monitoring Program is to assess compliance with RWLs and WQBELs established to implement TMDL wet weather and dry weather wasteload allocations WLAs. As such, a discussion of how the compliance evaluation will be conducted is warranted and is presented below.

D-6.5.1 Compliance Evaluation

The compliance evaluation will take into consideration the relationship between the types of monitoring and the pathways for determining compliance outlined in the Permit. For example, the receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP (Part II.E.1), receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not on its own indicate MS4 discharges caused or contributed to the RWL exceedance. As the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges, the exceedance of a RWL may have been caused or contributed to by a non-MS4 source. Additionally, an exceedance at an outfall location when the corresponding downstream receiving water location is in compliance with the water quality objectives and RWLs does not constitute an exceedance of a WQBEL.

Finally, reporting of compliance will be accomplished by evaluating the data, in addition to the status of WMP implementation consistent with the Permit (Parts VI.C.2, VI.C.3 and VI.E.2). Generally, reporting of compliance will consider whether the following conditions, as applicable, are met:

1. There are no violations of the effective WQBEL (i.e., interim or final) for the specific pollutant at the Permittee's applicable MS4 outfall(s).
2. There are no exceedances of an applicable RWLs for the specific pollutant in the receiving water(s) at, or downstream of, the Permittee's outfall(s).
3. There is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the time period subject to the WQBEL and/or RWL for the pollutant(s) associated with a specific TMDL.
4. In drainage areas where Permittees are implementing an WMP, (i) all non-stormwater and (ii) all stormwater runoff up to and including the volume equivalent to the 85th percentile, 24-hour event is retained for the drainage area tributary to the applicable receiving water.
5. The approved ULARWMG WMP is being implemented pursuant to Part VI.C of the Permit.
6. Conditions of effective Time Schedule Orders (TSOs) are met.
7. Exceedances of RWLs not otherwise addressed by a TMDL are addressed pursuant to Part VI.C.2 of the Permit.

In addition, evaluation of compliance for pollutants subject to TMDLs will consider the requirements specified in the applicable TMDLs described in the following subsections.

SGR Metals TMDL Interim Milestones Compliance Determination

Per the Metals TMDL, the WMP Group is required to show increasing percentages of the total watershed meeting dry and wet weather WLAs phased over a 12-year period. Table D-18 lists the compliance milestone dates as well as the required percent compliance for the total watershed. The percent compliance for the WMP Group will be calculated using an annual average. The annual average will be determined by averaging the total percentage for all of the sampling events occurring during an individual year to adequately characterize the dry or wet weather conditions for the reporting period.

Table D-18.
Compliance Milestone Dates and Required Percent Compliance

Compliance Milestone Date	Dry Weather Percent of Total Drainage Area Served by MS4 Meeting WLA	Wet Weather Percent of Total Drainage Area Served by MS4 Meeting WLA
September 30, 2017	30%	10%
September 30, 2020	70%	35%
September 30, 2023	100%	65%
September 30, 2026	100%	100%

Use of Specie-Specific Data for Chlordanes, PCBs, and PAHs

Chlordanes, PCBs, and PAHs are unique in that they are pollutant categories which may be analyzed for the species that make up the pollutant category and the species of interest varies depending on the purpose of data collection. The individual constituents are summed to determine “total” concentrations. The following describes how individual chlordane, PCB, and PAH species will be summed for comparison to applicable WQBELs, RWLs, TMDL targets, WLAs, and/or State adopted objectives.

Analysis included in this CIMP for chlordane includes the following species: alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor. The calculation of total chlordane will be conducted as follows:

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of alpha-chlordane, gamma-chlordane, trans-Nonachlor will be summed.
- When evaluating sediment concentrations and loads and tissue concentrations associated with indirect effects, quantified concentrations of alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor will be summed.
- Upon approval by the State Board, for the purposes of conducting analyses associated with the Decision Support Tool (DST) for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PCBs includes the following species: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 and congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153,

156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209. The calculation of total PCBs will be conducted as follows:

- When evaluating water concentrations for the purposes of comparing to the California Toxics Rule (CTR) aquatic life criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 will be summed.

- When evaluating water concentrations for the purposes of comparing to the CTR human health criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 or congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209 will be summed.

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of congeners 8,18, 28, 44, 52, 66, 101, 105, 118, 128, 138, 153, 170, 180, 187, 189, 195, 206, and 209 will be summed.

- When evaluating sediment and tissue samples associated with indirect effects, quantified concentrations of congeners 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206 will be summed

- Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PAHs includes the following constituents: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene. The calculation of total PAHs will be conducted as follows:

- When evaluating sediment and tissue samples associated with direct and indirect effects, quantified concentrations of Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene will be summed.

Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Attachment D

Appendix 1
Example Field and Chain-of-Custody Forms

EXAMPLE Field Log

GENERAL INFORMATION Date: __________

Site ID: ________________________________ Sampling Personnel: ________________________

GPS Coordinates: (lat) ____________________ (lon) ________________________ Picture/Video #: __________

OBSERVATIONS

Weather:____

Water Color:____________________________ In stream Activity:______________________________

Water Characteristics (flow type, odor, turbidity, floatables):____

Other comments (trash, wildlife, recreational uses, homeless activity, etc. – Use notes section if more room is needed):

____

***In situ* WATER QUALITY MEASUREMENTS**

Time	Temp (^{0}C)	pH	D.O. (mg/L)	D.O. % Sat	Elec Cond. (uS/cm)

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
				Field blank
				Field duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

Example Field Log

FLOW MEASUREMENTS WITH VELOCITY METER

Estimated Total Width of Flowing Water (ft): ____________ Distance measured from (circle): RIGHT or LEFT

Measurement Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Distance from Bank (ft)														
Depth (ft)														
Velocity (ft/s)														

FLOW MEASUREMENTS WITH FLOAT AND STOPWATCH Number of Flow Paths:______

Fill out Path #	Path#	Path#	Path#	Path#	Path#
Width of Flow at **Top** of Marked Section:					
Width of Flow at **Middle** of Marked Section:					
Width of Flow at **Bottom** of Marked Section:					
Depth of Flow at 0% of **Top** Marked Section:					
Depth of Flow at 25% of **Top** Marked Section:					
Depth of Flow at 50% of **Top** Marked Section:					
Depth of Flow at 75% of **Top** Marked Section:					
Depth of Flow at 100% of **Top** Marked Section:					
Depth of Flow at 0% of **Middle** Marked Section:					
Depth of Flow at 25% of **Middle** Marked Section:					
Depth of Flow at 50% of **Middle** Marked Section:					
Depth of Flow at 75% of **Middle** Marked Section:					
Depth of Flow at 100% of **Middle** Marked Section:					
Depth of Flow at 0% of **Bottom** Marked Section					
Depth of Flow at 25% of **Bottom** Marked Section:					
Depth of Flow at 50% of **Bottom** Marked Section:					
Depth of Flow at 75% of **Bottom** Marked Section:					
Depth of Flow at 100% of **Bottom** Marked Section					
Distance Marked-off for Velocity:					
Time 1:					
Time 2:					
Time 3:					

Specify if measurements are in inches or feet using "in" or "ft"

FLOW MEASUREMENT WITH GRADUATED CONTAINER

Container Volume:_______________ Percent Capture:_________________

Time to fill container:

	Minutes	Seconds
Time1		
Time2		
Time3		

ADDITIONAL FLOW MEASUREMENT NOTES:

Example Chain-of-Custody Form

CHAIN-OF-CUSTODY RECORD Date: Lab ID:

Destination Lab:

Address:

Phone:

Fax:

Sampled By:

Contact:

Project:

Client Sample Id	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.											Notes

Sender Comments:	Relinquished By (1):	Relinquished By (2):
	Signature:	
	Print:	
	Organization:	
	Date: Time:	Date: Time:
Laboratory Comments:	**Received By (1):**	**Received By (2):**
	Signature:	
	Print:	
	Organization:	
	Date: Time:	Date: Time:

Crew:

Attachment D

Appendix 2
Chapter 13 QA/QC Data Evaluation from Caltrans Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition

SECTION 13
QA/QC DATA EVALUATION

All data reported by the analytical laboratory must be carefully reviewed to determine whether the project's data quality acceptability limits or objectives (DQOs) have been met. This section describes a process for evaluation of all laboratory data, including the results of all QA/QC sample analysis.

Before any results are reported by the laboratory, the deliverable requirements should be clearly communicated to the laboratory, as described in the "Laboratory Data Package Deliverables" discussion in ***Section 12***.

The current section discusses QA/QC data evaluation in the following two parts:

KEY TOPICS

- **Initial Data Quality Screening**
- **Data Quality Evaluation**

The initial data quality screening identifies problems with laboratory reporting while they may still be corrected. When the data reports are received, they should be immediately checked for conformity to chain of custody requests to ensure that all requested analyses have been reported. The data are then evaluated for conformity to holding time requirements, conformity to reporting limit requests, analytical precision, analytical accuracy, and possible contamination during sampling and analysis. The data evaluation results in rejection, qualification, and narrative discussion of data points or the data as a whole. Qualification of data, other than rejection, does not necessary exclude use of the data for all applications. It is the decision of the data user, based on specifics of the data application, whether or not to include qualified data points.

➢ INITIAL DATA QUALITY SCREENING

The initial screening process identifies and corrects, when possible, inadvertent documentation or process errors introduced by the field crew or the laboratory. The initial data quality control screening should be applied using the following three-step process:

1. *Verification check between sampling and analysis plan (SAP), chain of custody forms, and laboratory data reports*: Chain of custody records should be compared with field logbooks and laboratory data reports to verify the accuracy of all sample identification and to ensure that all samples submitted for analysis have a value reported for each parameter requested. Any deviation from the SAP that has not yet

been documented in the field notes or project records should be recorded and corrected if possible.

Sample representativeness should also be assessed in this step. The minimum acceptable storm capture parameters (number of aliquots and percent storm capture) per amount of rainfall are specified in ***Section 10***. Samples not meeting these criteria are generally not analyzed; however, selected analyses can be run at the Caltrans task manager's discretion. If samples not meeting the minimum sample representativeness criteria are analyzed, the resulting data should be rejected ("R") or qualified as estimated ("J"), depending upon whether the analyses were approved by Caltrans. Grab samples should be taken according to the timing protocols specified in the SAP. Deviations from the protocols will result in the rejection of the data for these samples or qualification of the data as estimated. The decision to reject a sample based on sample representativeness should be made prior to the submission of the sample to the laboratory, to avoid unnecessary analytical costs.

2. *Check of laboratory data report completeness*: As discussed in ***Section 12***, the end product of the laboratory analysis is a data report that should include a number of QA/QC results along with the environmental results. QA/QC sample results reported by the lab should include both analyses requested by the field crew (field blanks, field duplicates, lab duplicates and MS/MSD analysis), as well as internal laboratory QA/QC results (method blanks and laboratory control samples).

There are often differences among laboratories in terms of style and format of reporting. Therefore, it is prudent to request in advance that the laboratory conform to the style and format approved by Caltrans as shown in ***Section 14***. The Caltrans data reviewer should verify that the laboratory data package includes the following items:

- ✓ A narrative which outlines any problems, corrections, anomalies, and conclusions.
- ✓ Sample identification numbers.
- ✓ Sample extraction and analysis dates.
- ✓ Reporting limits for all analyses reported.
- ✓ Results of method blanks.
- ✓ Results of matrix spike and matrix spike duplicate analyses, including calculation of percent recovered and relative percent differences.
- ✓ Results of laboratory control sample analyses.
- ✓ Results of external reference standard analyses.
- ✓ Surrogate spike and blank spike analysis results for organic constituents.

✓ A summary of acceptable QA/QC criteria (RPD, spike recovery) used by the laboratory.

Items missing from this list should be requested from the laboratory.

3. *Check for typographical errors and apparent incongruities*: The laboratory reports should be reviewed to identify results that are outside the range of normally observed values. Any type of suspect result or apparent typographical error should be verified with the laboratory. An example of a unique value would be if a dissolved iron concentration has been reported lower than 500 μg/L for every storm event monitored at one location and then a value of 2500 μg/L is reported in a later event. This reported concentration of 2500 μg/L should be verified with the laboratory for correctness.

   Besides apparent out-of-range values, the indicators of potential laboratory reporting problems include:

   - Significant lack of agreement between analytical results reported for laboratory duplicates or field duplicates.
   - Consistent reporting of dissolved metals results higher than total or total recoverable metals.
   - Unusual numbers of detected values reported for blank sample analyses.
   - Inconsistency in sample identification/labeling.

   If the laboratory confirms a problem with the reported concentration, the corrected or recalculated result should be issued in an amended report, or if necessary the sample should be re-analyzed. If laboratory results are changed or other corrections are made by the laboratory, an amended laboratory report should be issued to update the project records.

➢ DATA QUALITY EVALUATION

The data quality evaluation process is structured to provide systematic checks to ensure that the reported data accurately represent the concentrations of constituents actually present in stormwater. Data evaluation can often identify sources of contamination in the sampling and analytical processes, as well as detect deficiencies in the laboratory analyses or errors in data reporting. Data quality evaluation allows monitoring data to be used in the proper context with the appropriate level of confidence.

QA/QC parameters that should be reviewed are classified into the following categories:

✔ Reporting limits

- ✔ Holding times
- ✔ Contamination check results (method, field, trip, and equipment blanks)
- ✔ Precision analysis results (laboratory, field, and matrix spike duplicates)
- ✔ Accuracy analysis results (matrix spikes, surrogate spikes, laboratory control samples, and external reference standards)

Each of these QA/QC parameters should be compared to data quality acceptability criteria, inalso known as the project's data quality objectives (DQOs). The key steps that should be adhered to in the analysis of each of these QA/QC parameters are:

1. Compile a complete set of the QA/QC results for the parameter being analyzed.
2. Compare the laboratory QA/QC results to accepted criteria (DQOs).
3. Compile any out-of-range values and report them to the laboratory for verification.
4. Prepare a report that tabulates the success rate for each QA/QC parameter analyzed.

This process should be applied to each of the QA/QC parameters as discussed below.

Reporting Limits

Stormwater quality monitoring program DQOs should contain a list of acceptable reporting limits that the lab is contractually obligated to adhere to, except in special cases of insufficient sample volume or matrix interference problems. The reporting limits used should ensure a high probability of detection. , Table 12-1 provides recommended reporting limits for selected parameters.

Holding Times

Holding time represents the elapsed time between sample collection time and sample analysis time. Calculate the elapsed time between the sampling time and start of analysis, and compare this to the required holding time. For composite samples that are collected within 24-hours or less, the time of the final sample aliquot is considered the "sample collection time" for determining sample holding time. For analytes with critical holding times (≤48 hours), composite samples lasting longer than 24-hours require multiple bottle composite samples. Each of these composite samples should represent less than 24 hours of monitored flow, and subsamples from the composites should have been poured off and analyzed by the laboratory for those constituents with critical holding times (***see Section 12***). It is important to review sample holding times to ensure that analyses occurred within the time period that is generally accepted to maintain stable parameter concentrations. Table 12-1 contains the holding times for selected parameters. If holding times are exceeded, inaccurate concentrations or false negative results may be reported.

Samples that exceed their holding time prior to analysis are qualified as "estimated", or may be rejected depending on the circumstances.

Contamination

Blank samples are used to identify the presence and potential source of sample contamination and are typically one of four types:

1. ***Method blanks*** are prepared and analyzed by the laboratory to identify laboratory contamination.
2. ***Field blanks*** are prepared by the field crew during sampling events and submitted to the laboratory to identify contamination occurring during the collection or the transport of environmental samples.
3. ***Equipment blanks*** are prepared by the field crew or laboratory prior to the monitoring season and used to identify contamination coming from sampling equipment (tubing, pumps, bailers, etc.).
4. ***Trip blanks*** are prepared by the laboratory, carried in the field, and then submitted to the laboratory to identify contamination in the transport and handling of volatile organics samples.
5. ***Filter blanks*** are prepared by field crew or lab technicians performing the sample filtration. Blank water is filtered in the same manner and at the same time as other environmental samples. Filter blanks are used to identify contamination from the filter or filtering process.

If no contamination is present, all blanks should be reported as "not detected" or "non-detect" (e.g., constituent concentrations should not be detected above the reporting limit). Blanks reporting detected concentrations ("hits") should be noted in the written QA/QC data summary prepared by the data reviewer. In the case that the laboratory reports hits on method blanks, a detailed review of raw laboratory data and procedures should be requested from the laboratory to identify any data reporting errors or contamination sources. When other types of blanks are reported above the reporting limit, a similar review should be requested along with a complete review of field procedures and sample handling. Often times it will also be necessary to refer to historical equipment blank results, corresponding method blank results, and field notes to identify contamination sources. This is a corrective and documentative step that should be done as soon as the hits are reported.

If the blank concentration exceeds the laboratory reporting limit, values reported for each associated environmental sample must be evaluated according to USEPA guidelines for data evaluations of organics and metals (USEPA, 1991; USEPA, 1995) as indicated in Table 13-1.

Table 13-1. USEPA Guidelines for Data Evaluation

Step	*Environmental Sample*	*Phthalates and other common contaminants*	*Other Organics*	*Metals*
1.	Sample > 10X blank concentration	No action	No action	No action
2.	Sample < 10X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	No action	Results considered an "upper limit" of the true concentration (note contamination in data quality evaluation narrative).
3.	Sample < 5X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.

Specifically, if the concentration in the environmental sample is less than five times the concentration in the associated blank, the environmental sample result is considered, for reporting purposes, "not-detected" *at the environmental sample result concentration* (phthalate and other common contaminant results are considered non-detect if the environmental sample result is less than ten times the blank concentration). The laboratory reports are not altered in any way. The qualifications resulting from the data evaluation are made to the evaluator's data set for reporting and analysis purposes to account for the apparent contamination problem. For example, if dissolved copper is reported by the laboratory at 4 mg/L and an associated blank concentration for dissolved copper is reported at 1 mg/L, data qualification would be necessary. In the data reporting field of the database (see ***Section 14***), the dissolved copper result would be reported as 4 mg/L*)*, the numerical qualifier would be reported as "<", the reporting limit would be left as reported by the laboratory, and the value qualifier would be reported as "U" ("not detected above the reported environmental concentration").

When reported environmental concentrations are greater than five times (ten times for phthalates) the reported blank "hit" concentration, the environmental result is reported unqualified at the laboratory-reported concentration. For example, if dissolved copper is reported at 11 mg/L and an associated blank concentration for dissolved copper is reported at 1 mg/L, the dissolved copper result would still be reported as 11 mg/L.

Precision

Duplicate samples provide a measure of the data precision (reproducibility) attributable to sampling and analytical procedures. Precision can be calculated as the relative percent difference (RPD) in the following manner:

$$RPD_i = \frac{2 * |O_i - D_i|}{(O_i + D_i)} * 100\%$$

where:

RPD_i = Relative percent difference for compound i

O_i = Value of compound i in original sample

D_i = Value of compound i in duplicate sample

The resultant RPDs should be compared to the criteria specified in the project's DQOs. The DQO criteria shown in Table 13-2 below are based on the analytical method specifications and laboratory-supplied values. Project-specific DQOs should be developed with consideration to the analytical laboratory, the analytical method specifications, and the project objective. Table 13-2 should be used as a reference point as the least stringent set of DQO criteria for Caltrans monitoring projects.

<u>Laboratory and Field Duplicates</u>

Laboratory duplicates are samples that are split by the laboratory. Each half of the split sample is then analyzed and reported by the laboratory. A pair of field duplicates is two samples taken at the same time, in the same manner into two unique containers. Subsampling duplicates are two unique, ostensibly identical, samples taken from one composite bottle (see ***Section 10***). Laboratory duplicate results provide information regarding the variability inherent in the analytical process, and the reproducibility of analytical results. Field duplicate analysis measures both field and laboratory precision, therefore, it is expected that field duplicate results would exhibit greater variability than lab duplicate results. Subsampling duplicates are used as a substitute for field duplicates in some situations and are also an indicator of the variability introduced by the splitting process.

The RPDs resulting from analysis of both laboratory and field duplicates should be reviewed during data evaluation. Deviations from the specified limits, and the effect on reported data, should be noted and commented upon by the data reviewer. Laboratories typically have their own set of maximum allowable RPDs for laboratory duplicates based on their analytical history. In most cases these values are more stringent than those listed in Table 13-2. Note that the laboratory will only apply these maximum allowable RPDs to laboratory duplicates. In most cases field duplicates are submitted "blind" (with pseudonyms) to the laboratory.

Environmental samples associated with laboratory duplicate results greater than the maximum allowable RPD (when the numerical difference is greater than the reporting limit) are qualified as "J" (estimated). When the numerical difference is less than the RL, no qualification is necessary. Field duplicate RPDs are compared against the maximum allowable RPDs used for laboratory duplicates to identify any pattern of problems with reproducibility of results. Any significant pattern of RPD exceedances for field duplicates should be noted in the data report narrative.

Corrective action should be taken to address field or laboratory procedures that are introducing the imprecision of results. The data reviewer can apply "J" (estimated) qualifiers to any data points if there is clear evidence of a field or laboratory bias issue that is not related to contamination. (Qualification based on contamination is assessed with blank samples.)

Laboratories should provide justification for any laboratory duplicate samples with RPDs greater than the maximum allowable value. In some cases, the laboratory will track and document such exceedances, however; in most cases it is the job of the data reviewer to locate these out-of-range RPDs. When asked to justify excessive RPD values for field duplicates, laboratories most often will cite sample splitting problems in the field. Irregularities should be included in the data reviewer's summary, and the laboratory's response should be retained to document laboratory performance, and to track potential chronic problems with laboratory analysis and reporting.

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy is measured as the percent recovery (%R) of spike compound(s). Percent recovery of spikes is calculated in the following manner:

$$\%R = 100\% * [(C_s - C) / S]$$

where:

$\%R$ = percent recovery

C_s = spiked sample concentration

C = sample concentration for spiked matrices

S = concentration equivalent of spike added

Accuracy (%R) criteria for spike recoveries should be compared with the limits specified in the project DQOs. A list of typical acceptable recoveries is shown in Table 13-2. As in the case of maximum allowable RPDs, laboratories develop acceptable criteria for an allowable range of recovery percentages that may differ from the values listed in Table 13-2.

Percent recoveries should be reviewed during data evaluation, and deviations from the specified limits should be noted in the data reviewer's summary. Justification for out of range recoveries should be provided by the laboratory along with the laboratory reports, or in response to the data reviewer's summary.

Laboratory Matrix Spike and Matrix Spike Duplicate Samples

Evaluation of analytical accuracy and precision in environmental sample matrices is obtained through the analysis of laboratory matrix spike (MS) and matrix spike duplicate (MSD) samples. A matrix spike is an environmental sample that is spiked with a known amount of the constituent being analyzed. A percent recovery can be calculated from the results of the spike analysis. A MSD is a duplicate of this analysis that is performed as a check on matrix recovery precision. MS and MSD results are used together to calculate RPD as with the duplicate samples. When MS/MSD results (%R and RPD) are outside the project specifications, as listed in Table 13-2, the associated environmental samples are qualified as "estimates due to matrix interference". Surrogate standards are added to all environmental and QC samples tested by gas chromatography (GC) or gas chromatography-mass spectroscopy (GC-MS). Surrogates are non-target compounds that are analytically similar to the analytes of interest. The surrogate compounds are spiked into the sample prior to the extraction or analysis. Surrogate recoveries are evaluated with respect to the laboratory acceptance criteria to provide information on the extraction efficiency of every sample.

External Reference Standards

External reference standards (ERS) are artificial certified standards prepared by an external agency and added to a batch of samples. ERS's are not required for every batch of samples, and are often only run quarterly by laboratories. Some laboratories use ERS's in place of laboratory control spikes with every batch of samples. ERS results are assessed the same as laboratory control spikes for qualification purposes (see below). The external reference standards are evaluated in terms of accuracy, expressed as the percent recovery (comparison of the laboratory results with the certified concentrations). The laboratory should report all out-of-range values along with the environmental sample results. ERS values are qualified as biased high" when the ERS recovery exceeds the acceptable recovery range and "biased low" when the ERS recovery is smaller than the recovery range.

Laboratory Control Samples

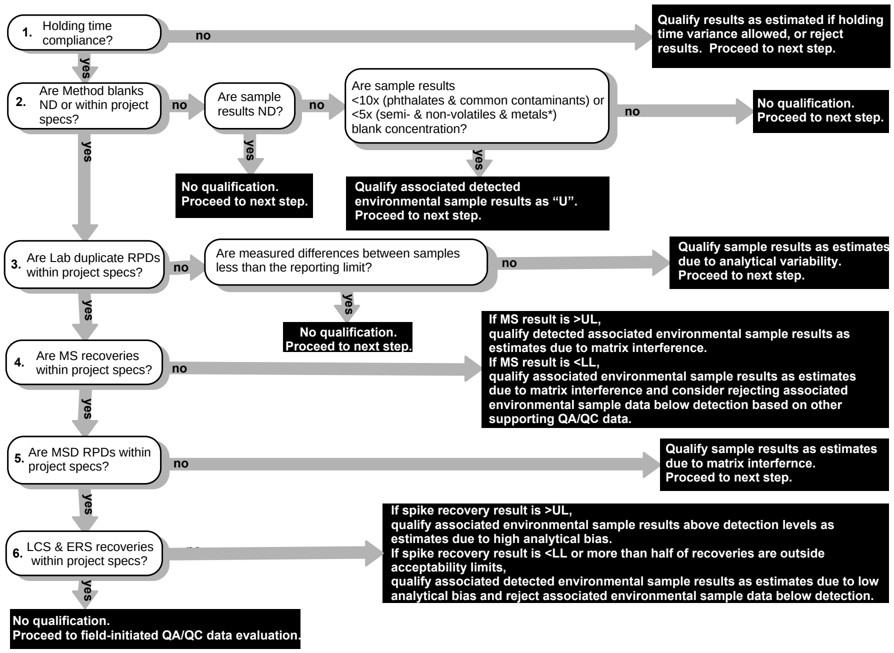
LCS analysis is another batch check of recovery of a known standard solution that is used to assess the accuracy of the entire recovery process. LCSs are much like ERS's except that a certified standard is not necessarily used with LCSs, and the sample is prepared internally by the laboratory so the cost associated with preparing a LCS sample is much lower than the cost of ERS preparation. LCSs are reviewed for percent recovery within

control limits provided by the laboratory. LCS out-of-range values are treated in the same manner as ERS out-of-range values. Because LCS and ERS analysis both check the entire recovery process, any irregularity in these results supersedes other accuracy-related qualification. Data are rejected due to low LCS recoveries when the associated environmental result is below the reporting limit.

A flow chart of the data evaluation process, presented on the following pages as Figures 13-1 (lab-initiated QA/QC samples) and 13-2 (field-initiated QA/QC), can be used as a general guideline for data evaluation. Boxes shaded black in Figures 13-1 and 13-2 designate final results of the QA/QC evaluation.

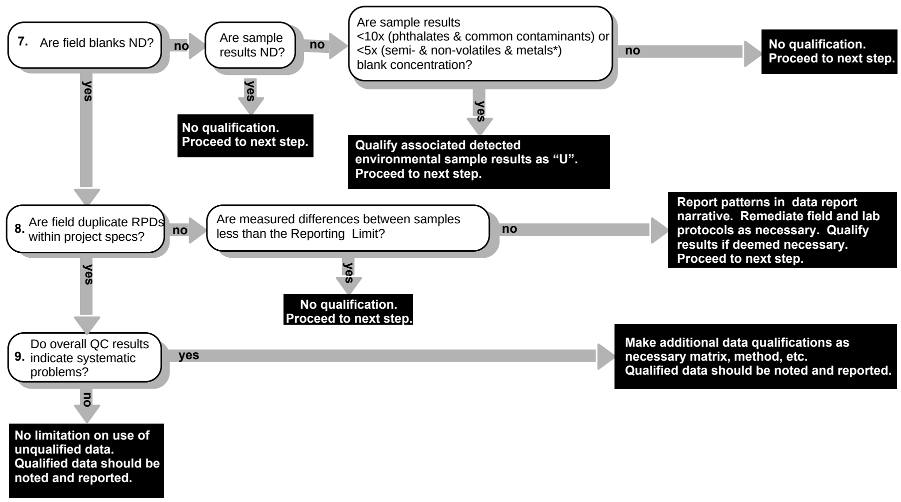
Table 13-2. Typical Control Limits for Precision and Accuracy for Analytical Constituents

Analyte	EPA Method Number or Standard Method	Maximum Allowable RPD	Recovery Upper Limit	Recovery Lower Limit
Conventionals				
BOD	405.1; SM 5210B	20%	80%	120%
COD	410.1; 410.4; SM 5220C; SM 5220D	20%	80%	120%
Hardness	130.2; 130.1; SM 2340B	20%	80%	120%
pH	150.1	20%	NA	NA
TOC/DOC	415.1	15%	85%	115%
TDS	160.1	20%	80%	120%
TSS	160.2	20%	80%	120%
Turbidity	180.1	20%	NA	NA
Nutrients				
NH3-N	350.2; 350.3	20%	80%	120%
NO3-N	300.0	20%	80%	120%
NO2-N	300.0	20%	80%	120%
NO3/NO2-N	353.2	20%	80%	120%
P	365.2	20%	80%	120%
Ortho-P	365.2; 365.3	20%	80%	120%
TKN	351.3	20%	80%	120%
Metals				
Ag	272.2; 200.8	20%	75%	125%
Al	200.9; 200.8	20%	75%	125%
Cd	213.2; 200.8	20%	75%	125%
Cr	218.2; 200.8	20%	75%	125%
Cu	220.2; 200.8	20%	75%	125%
Ni	249.2; 200.8	20%	75%	125%
Pb	239.2; 200.8	20%	75%	125%
Zn	289.2; 200.8	20%	75%	125%
As	206.3; 200.8	20%	75%	125%
Fe	200.9; SM 3500-Fe B	20%	75%	125%
Se	200.9; 270.3; 200.8	20%	75%	125%
Hg	1631	21%	79%	121%
Total Petroleum Hydrocarbons				
TPH (gasoline)	8015b	21%	45%	129%
TPH (diesel)		21%	45%	129%
TPH (motor oil)		21%	45%	129%
Oil & Grease	1664	18%	79%	114%
Pesticides and Herbicides				
Glyphosate	547	30%	70%	130%
OP Pesticides (esp. diazinon and chlorpyrifos)	8141; ELISA	25%	see method for constituent specific	
OC Pesticides	8081	25%		
Chlorinated Herbicides	8150; 8151	25%		
Carbamate Pesticides	8321	25%		
Miscellaneous Organic Constituents				
Base/Neutrals and Acids	625; 8270	30% to 50% (analyte dependent)	see method for constituent specific	
PAHs	8310			
Purgeables	624; 8260	20%		
Purgeable Halocarbons	601	30%	see method, Table 2	
Purgeable Aromatics	602	20%	see method for constituent specific	
Miscellaneous Constituents				
Cyanide	335.2	20%	75	125
Bacteriological				
Fecal Coliform	SM 9221E	-	-	-
Total Coliform	SM 9221B	-	-	-



*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-1. Technical Data Evaluation for Lab-Initiated QA/QC Samples



*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-2. Technical Data Evaluation for Field-Initiated QA/QC Samples

Attachment E

Stormwater Outfall Selection

E-1 Stormwater Outfall Site Selection

The primary criterion cited in the MRP for selection of monitoring sites for the stormwater outfall monitoring program is that the sites are representative of the range of land uses in the area. An additional stated criterion for site selection is the ability to accurately measure flows for pollutant loads characterization. Flow measurement is easily addressed by physical assessment of the site conditions and consideration of access to the site. The primary criterion in the MRP implies an assessment of variation of land uses within the WMA, potential variation in water quality issues for different HUC-12 drainages, and geographic variation in factors influencing runoff quality.

In addition to the primary criteria for monitoring site selection, the Permit defined specific objectives depend on the representativeness of the stormwater outfall monitoring are as follows:.

- Determine the quality of discharge relative to municipal action levels
- Determine whether the discharge is in compliance with WQBELs derived from TMDL WLAs
- Determine whether a discharge causes or contributes to exceedances of receiving water limitations (RWL).

The default approach in the MRP to achieving adequate representation is to select one major outfall in each hydrological unit (HUC–12) within each individual Permittee's jurisdiction. Consequently, the minimum number of outfalls required for monitoring under the default approach is equal to the total number of unique combinations of HUC-12s and jurisdictions. The default approach is geared toward ensuring adequate accountability and representation if the Permittees monitor as individual entities, but results in monitoring more outfall discharges than needed for efforts coordinated among the ESGV Group. For the East San Gabriel Valley WMA, there would be 9 (or possibly 10) stormwater outfalls using the default approach.

The default approach would also result in several areas of relatively small and isolated HUC–12-Jurisdictional overlap for the Group Members. In some cases, these areas are predominately open space or undeveloped area. These areas are essentially an artifact of the default approach and would not provide significant additional characterization of runoff. Specific examples include:

- There is a very small overlap of the Pomona jurisdiction with the Dalton Wash HUC–12 (~78 acres).
- There is a small overlap of the La Verne jurisdiction with the Upper San Jose Creek HUC-12 (~145 acres).
- There is a small overlap of the north La Verne jurisdiction with an HUC–12 (~400 acres of mainly residential area plus substantially more open space).

- There is a small overlap of the south San Dimas jurisdiction with the Upper San Jose HUC-12 (~260 acres of mainly residential area plus substantially more open space).

As an alternative to the MRP's default monitoring approach, the Group Members is proposing to monitor one major outfall for each HUC12 in the WMA. The monitoring sites would consist of two outfalls with drains collecting runoff from two jurisdictions in the northern portion of the WMA, and one outfall in the southern portion of the WMA. The resulting data would be considered representative of all Group Members' discharge in the HUC–12s, would provide representative results needed to meet all three specific monitoring objectives, and would also provide the basis for stormwater management decisions for all Group Members. The rationale supporting the Group Members' alternative approach follows.

E-2 Representativeness of Selected Outfalls

The principal criterion for the site selection for stormwater outfall monitoring is that sites are representative of the range of land uses in the WMA. The drainages within the Group Members' WMA are comprised primarily of residential, commercial, and industrial land uses, with minimal percentages of agriculture and undeveloped open space. The three proposed outfalls were selected specifically to characterize runoff from drainages that are representative of the mix of these primary land uses in the WMA, and to minimize contributions from other land uses. Land use summaries for the ESGV Group are listed in **Table E-1**.

- Residential land use represents 64–84% of the monitored drainages.
- Commercial and Industrial land use represent 10–30% of the monitored drainages.
- Non-urban influences on runoff are minimized: Agriculture represents <1%, and open space represents <3% of the monitored drainages.

The monitored outfalls and drainages are geographically distributed in the WMA, and runoff from all 3 HUC–12s with significant urban drainage is characterized (Big Dalton Wash, Upper San Jose Creek, Upper Chino Creek), as well as runoff from each of the four jurisdictions (Claremont, Pomona, San Dimas, La Verne). The monitored drainages also represent a range of drainage sizes (0.19 – 1.3 square miles) and would directly characterize approximately 3.9% of the total WMP drainage area.

Table E-1.
Land Use Summary, areas in square miles and percent of drainage

Monitored Drainage	Units	Residential	Commercial / Industrial	Agriculture	Open Space	Other (not applicable)	TOTAL	Percent of Total WMP Area (61.3 sq.miles)
MTD 766	sq.miles	0.159	0.019	0.001	0.0	0.011	0.19	
	% drainage	84%	10%	0.6%	0.0%	5.7%	100%	*0.31%*
San Antonio Drain	sq.miles	0.834	0.386	0.0	0.021	0.058	1.30	
	% drainage	64%	30%	0.0%	1.6%	4.4%	100%	*2.1%*
BI 0566	sq.miles	0.722	0.129	0.0	0.022	0.004	0.877	
	% drainage	82%	15%	0.0%	2.5%	0.4%	100%	*1.4%*
								3.9%

E-3 STORMWATER MONITORING DATA VARIABILITY

The inter-event variability (e.g., for different storm events) in stormwater discharge quality is much greater than between individual outfall drainages or major land uses. Based on stormwater monitoring results from other programs, discharge quality from drainages with similar mixed land uses is not substantially different, and it will be impossible to distinguish statistically between drainages with a reasonable amount of monitoring because of the high variability in discharge quality for each site. The statistical power analysis based on the range of typical stormwater discharge quality distributions and the number of sample collected for the permit term, 15 samples per site, is enumerated in **Table E-2**. For example, the analysis results in an average difference between sites would need to be greater than 62% to be detected with 95% confidence and 80% power for a pollutant with a fairly "typical" coefficient of variance (COV) of 0.66. COVs for stormwater discharge quality are generally greater than 0.2 and commonly exceed 1.0. Programmatically meaningful differences (i.e., differences between sites as small as 20%) would not be expected to be detected for most constituents over the time frame of the permit.

Given the high variability typical of stormwater pollutant levels, and with only a few storm events that can be collected per year, it will not be possible to make meaningful distinctions between drainages, either within land use types, across land use types, or between jurisdictions. Management implementation by the Permittees is also expected to be relatively consistent

throughout the WMA, so additional focus on geographic differences is not necessary. This means that only a handful of sites are needed to adequately characterize residential land use discharge quality within the WMA. Consequently, sampling more than a few representative sites is unlikely to significantly improve characterization of runoff quality, or to better inform the Group Memberss's management decisions.

Realistically achievable changes in stormwater runoff quality or loads (e.g., 20–50% reductions) are statistically demonstrable only over relatively long periods of time (≥10 years). This is also due to the high variability between events and the relatively few number of events that can be sampled each season, and additional monitoring sites will do little to improve the statistical power of such trend analysis within the permit time frame compared to longer periods of evaluation. This also supports the need to assess management effectiveness and compliance based primarily on successful implementation actions rather than explicit demonstration of improvements in runoff quality.

E-3.1 Recommendation for Stormwater Outfall Site Selection

Based on the evaluations above, the Group Members's proposed CIMP approach to monitor one outfall for each HUC–12 in the WMA will provide the representative data needed to meet the specific permit objectives for stormwater outfall monitoring and support management decisions of the Group Members. Additional monitoring sites within these three HUC–12s will not provide significant improvements in representation or characterization of discharge quality, or additional information for discharge quality management.

Table E-2.
Detectible Significant Percent Differences between Sites

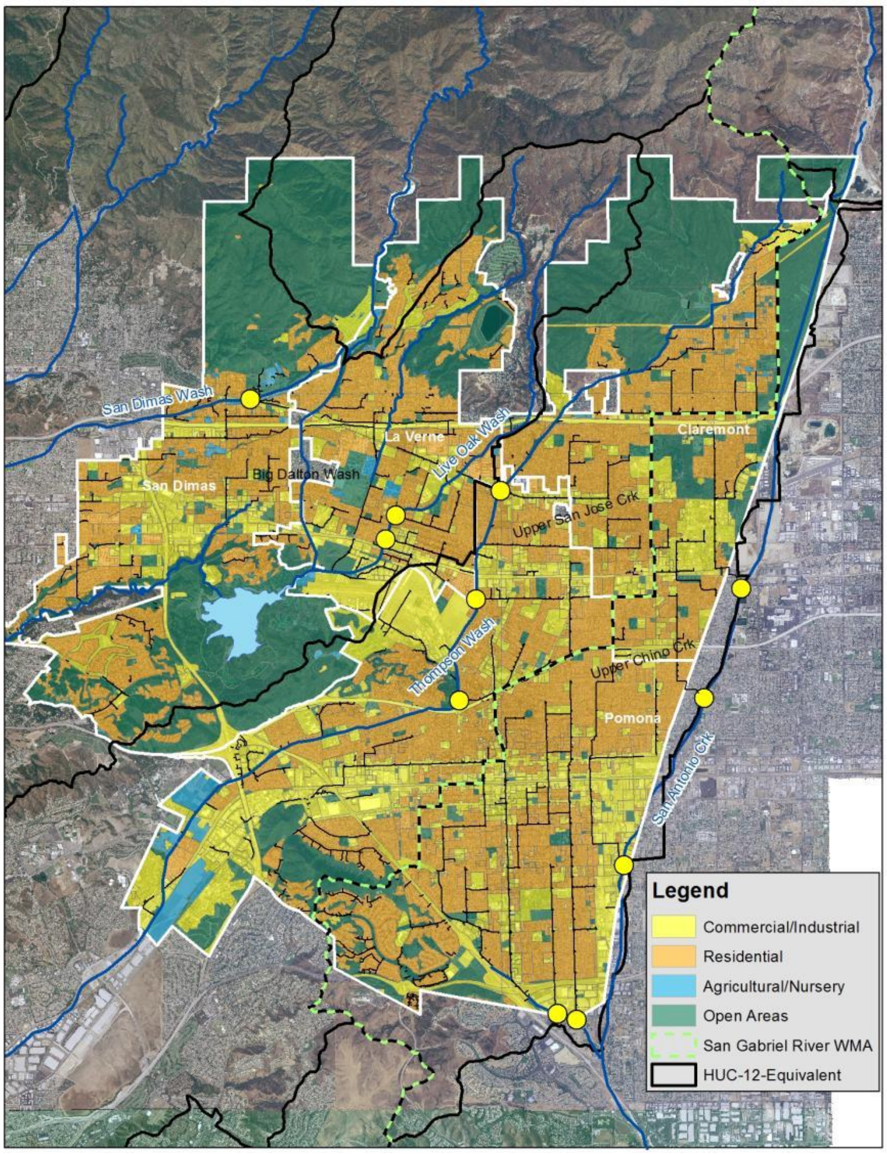
Sample Size = 15, alpha = 0.05		
COV	**power=0.8**	**power 0.9**
0.20	21%	24%
0.31	32%	36%
0.42	42%	48%
0.53	52%	59%
0.66	62%	70%
0.80	71%	81%
0.95	80%	91%
1.12	89%	100%
1.31	97%	109%

Attachment F

Alternate Stormwater Outfall Sites

There are three major HUC-12 Equivalents that cover the jurisdictions of the ESGV WMP Group. Presented below, are potential wet weather outfall monitoring sites by HUC-12 Equivalent as shown in the figure. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites are provided in this section. While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety issues under storm conditions. The potential stormwater outfalls are displayed in **Figure F-1**.

Figure F-1.
Potential Stormwater Outfalls



Three potential outfalls considered for wet weather monitoring in the Big Dalton Wash HUC-12 Equivalent are presented in **Table F-1**

RB-AR4173

Table F-1.
Potential Wet Weather Outfall Monitoring Sites – Big Dalton Wash HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Big Dalton Wash	La Verne	BI 9701 Line A	49”	Square or Rectangle	Reinforced Conc. Box	34.10429	-117.77243
Big Dalton Wash	San Dimas	MTD 766	42”	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Big Dalton Wash	La Verne	BI 0449 La Verne	54”	Square or Rectangle	Reinforced Conc. Box	34.10020	-117.77453

Three potential outfalls considered for wet weather monitoring in the Upper San Jose Creek HUC-12 Equivalent are presented in **Table F-2**.

Table F-2.
Potential Wet Weather Outfall Monitoring Sites – Upper San Jose Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper San Jose Crk	Pomona	BI 0266	93”	Round	Reinforced Conc. Pipe	34.07278	-117.75952
Upper San Jose Crk	Pomona	BI 0520 Line A	107”	Square or Rectangle	Reinforced Conc. Box	34.10831	-117.75105
Upper San Jose Crk	Pomona	RDD 0086 Thompson Crk	48”	Round	Reinforced Conc. Pipe	34.08998	-117.75595

Five potential outfalls considered for wet weather monitoring in the Upper Chino Creek HUC-12 Equivalent are presented in **Table F-3**.

Table F-3.
Potential Wet Weather Outfall Monitoring Sites – Upper Chino Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper Chino Crk	Pomona	BI 0267	63”	Square or Rectangle	Reinforced Conc. Box	34.04466	-117.72593
Upper Chino Crk	Pomona	San Antonio Drain Unit 1	108”	Square or Rectangle	Reinforced Conc. Box	34.01836	-117.73567
Upper Chino Crk	Pomona	BI 6402 Unit 1 Line C	81”	Round	Reinforced Conc. Pipe	34.01948	-117.73962
Upper Chino Crk	Claremont	BI 1122	87”	Round	Reinforced Conc. Pipe	34.09178	-117.70173
Upper Chino Crk	Claremont	BI 0022 Line C	90”	Round	Reinforced Conc. Pipe	34.07312	-117.70945

Table 1 - Comments to ESGV Draft CIMP

Comment	CIMP Reference/ MRP Element/Reference (Attachment E)	Regional Board Comment and Necessary Revision	Response Comments/Notes
1	Section 1 Table 1-4	The revised CIMP should be updated with description of the SGR Metals TMDL Implementation Plan adopted by the Regional Water Board, which became effective on October 13, 2014 See http://63.199.216.6/larwqcb_new/bpa/docs/R13-004/R13-004_RB-BPA.pdf	SGR Metals TMDL Implementation Plan date modified as noted.
2	Section 2 TMDL Monitoring	The CIMP appropriately includes coordination with other parties regarding monitoring of other impaired waterbodies, including in Puddingstone Reservoir and at the mouth of the San Gabriel River as required by the Dominquez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics Pollutants TMDLs (Harbor Toxics TMDL). For Pomona and Claremont, the CIMP appropriately references monitoring in the Middle Santa Ana River, as required by the Middle Santa Ana River Bacterial Indicatory TMDL, and provides links in Attachment A to both cities' Comprehensive Bacteria Reduction Plans developed pursuant to this TMDL.	Thank you. Comment noted.
3	Section 2, Table 2-1 Frequency of sampling; Aquatic Toxicity	Table 2-1 presents the proposed monitoring, parameters and frequency of sampling during wet/dry For San Jose Creek Reach 2, the wet weather monitoring for metals should be increased to 4x/year to be consistent with SGR metals TMDL. Reach 2 is considered a tributary to the downstream impaired Reach 1. Wet-weather monitoring results from the first year may be evaluated to determine whether reducing the frequency to 3x/year would still provide sufficient data. Tee The ESGV WMG may request a reduction in frequency on the basis of this data evaluation. For Live Oak Wash, the wet-weather monitoring for organochlorine compounds should be increased to 3x/year. Dry weather monitoring for nutrients should be included at a frequency of 2x/year. Live Oak Wash is considered an input to Puddingstone Reservoir. Aquatic toxicity monitoring in the receiving water is required two times per year during wet weather conditions and once per year during dry weather conditions. This applies to San Jose Creek Reach 2, San Dimas Wash and Walnut Creek Wash. See Enclosure 2 for more detailed comments on aquatic toxicity monitoring. (See Attachment E, Parts VI.C.1.d.vi and VI.D.1.c.vi.)	San Jose Creek metals and selenium wet-weather frequency increased to 4x/yr. Language was added indicating the first year of monitoring data will be evaluated to determine if 3x/yr would provide sufficient data. If 3 times per year would be sufficient the group will request a reduction in monitoring frequency. Live Oak Wash PCB and OC wet weather monitoring of one event per year is consistent with the Puddingstone TMDL monitoring requirements. (pages E-59-60 of Attachment E to the Permit), therefore the proposed frequency has not changed per our discussions on January 13, 2015. Live Oak Wash nutrient dry weather monitoring is not a component of the Puddingstone TMDL monitoring requirements. Additionally, to be consistent with the Puddingstone TMDL monitoring requirements (page E-59 of Attachment E to the Permit), wet weather monitoring is listed at 2x/year to be consistent with the TMDL monitoring requirements as discussed during the meeting on January 13, 2015. The ESGV Group proposes to use the LTA site on Live Oak Wash as the group's sentinel site for toxicity monitoring. TIE-identified pollutants would be add to the San Jose Creek and San Dimas Wash receiving water sites. If the TIE performed at the LTA site is inconclusive, the Group will add toxicity monitoring to the San Jose Creek and San Dimas Wash receiving water sites. Through the Pomona WRP, LACSD monitors toxicity in San Jose Creek under dry-weather just downstream of the ESGV Group boundary. TIE-identified pollutants would be added to the dry-weather monitoring list for the ESGV Group's San Jose Creek receiving water site. In addition, the Upper San Gabriel River EWMP Group (Upper Group) is proposing to monitor toxicity at the historic S14 mass emission site on the San Gabriel River. The S14 site is located downstream of the confluence with San Jose Creek. If the Upper Group observes toxicity at the S14 site from a wet-weather event and identifies pollutants through a TIE, the ESGV Group will add those pollutants to the San Jose Creek receiving water monitoring list. If the results of a TIE performed at S14 from a wet-weather event are inconclusive, the ESGV Group will add wet-weather toxicity to the San Jose Creek receiving water site. The modifications to the SJC receiving water site will occur at the next wet–weather event after obtaining notification from the Upper San Gabriel River Group. Attachment D modified to address toxicity analytical procedures and analysis of results
4	Section 3 MS4 Database	We appreciate the WMG for providing GIS files as part of the draft submittal. Section 3.2 states that information on dry weather diversions was included in database; however, we did not find a map in the draft submittal. The revised CIMP should include a map of the stormwater outfall dry weather diversions, if they exist. If not, then please explain. Updated GIS files should be included in the revised submittal, if necessary.	There are no dry weather diversions within the ESGV Group area.

Comment	CIMP Reference/ MRP Element/Reference (Attachment E)	Regional Board Comment and Necessary Revision	Response Comments/Notes
5	Section 4, Table 4-6 Outfall-based Stormwater Monitoring	The table should be modified to show monitoring of parameters identified for the San Dimas Wash stormwater outfall site will occur three times per year.	The monitoring frequencies are updated to 3 times per year.
6	Section 4 Representativeness of outfall site	Table 4-2 shows the land uses associated with each HUC-12 subwatershed. We note there are some slight differences between the residential land use percentages of stormwater outfall sites, which show a higher portion of residential land use than the HUC-12 distribution. The overall land use distributions within the Big Dalton, Wash and Upper San Jose Creek HUC-12 area, in particular, have significantly more Commercial/ Industrial land use than the corresponding outfall drainages. While this may be acceptable, additional support for the representativeness of the two outfall locations relative to their larger HUC-12 areas should be included in the revised CIMP.	The non-MS4 area in the HUC12 (e.g. the foothills, and Frank G Bonelli Park) and the areas covered by separate individual or general permits were excluded from the land use calculations. Table 4.2 is updated. As the non-MS4 areas were updated, Table 1-2 which is a summary of the land uses in the MS4 service areas was updated.
7	Section 5.2 Non-stormwater outfall screening	The revised CIMP needs to clarify the initial screening process by providing more detail on three initial screenings (time between each screening, including assurance that potential seasonality in non-stormwater discharges is captured by the initial three screenings) and providing clarity regarding whether a fourth screening would occur for outfalls where dry weather flow is considered to be significant. Table 5-2 the revised CIMP should more clearly define how the Permittees will determine what constitutes a "significant non-stormwater discharge" pursuant to Attachment E, Part IX.C.1.a-e.	Screening to be completed by the Summer 2015 to evaluate and address non-stormwater discharges and meet the compliance deadlines. Additional details added to the document on screening as noted below: • If no flow on first and second visit, don't visit a third time. • Definition of significance is set to the observed flow from outfalls.
8	Section 9 Wet Weather and Dry Weather Monitoring	The CIMP defines wet weather incorrectly as the period between October 1 and April 15. Instead, wet weather should be defined consistent with the SGR Metals and Selenium TMDL, i.e., when the equal maximum daily flow in Reach 2 of the SGR is greater than or equal to 260 cfs. Similarly the CIMP should include definition of dry weather and be consistent with the approved TMDLs.	The concern with the definition of wet weather, specifically to make the definition consistent with the EPA Metals and Selenium TMDL (Metals TMDL), utilizes the USGS station 11085000 that measures the flow released from Santa Fe Dam on the San Gabriel River. The Metals TMDL specifies 260 cfs as "wet weather". However, based on the review of the flow data, approximately 61% of water years between 1943 to date have no days with the flow from USGS 11085000 where the flow is greater than 260 cfs. Therefore, strict use of the gage flow to trigger wet weather would result in no "wet weather" conditions for over half of the water years. To capture the spirit of the wet conditions, the ESGV CIMP retained the storm event trigger as an indication of wet weather, and where local receiving waters are less than 20% greater than base flow as a dry weather trigger. Permit definition for dry weather was used. Text changed to indicate the reporting period to June through July
9	Section 12 CIMP schedule	The Implementation schedule (pg. 70) should be modified to identify which receiving water and outfall sites will be projected to be installed within this permit term. The Regional Water Board supports early installation of the LTA receiving water site. Regarding the installation of other sites, the installation of sites to assess compliance with the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL should occur in time to conduct monitoring prior to the first interim compliance deadlines for wet and dry weather of September 2017.	The revised schedule will focus on the RW locations first with 3 RW sites installed during the 2015-2016 wet season and 3 outfall sites to be installed during the 2016-2017 wet season.
Comments on Aquatic Toxicity Testing			
10	MRP Part XII.G.1. (Page E-30) and Part XII.G.2.(Page E-30)	The MRP states that Permittees shall conduct aquatic toxicity monitoring utilizing the critical life stage chronic toxicity test methods listed. The draft CIMP does not propose use of critical life stage chronic toxicity test methods for assessment of toxicity in wet weather samples and instead proposes use of acute toxicity test methods. This is not acceptable. The appropriate chronic toxicity test method listed in the MRP must be used and both survival and sublethal endpoints must be reported. We suggest the Group consult the State Water Resources Control Board 2011 publication, "Implementation Guidance: Toxicity Testing for Stormwater" to gain insight on how to run chronic toxicity tests on wet weather samples.	The ESGV Group intends to be consistent with the adopted County-wide approach currently being determined. The Group will conduct sampling as determined by the Regional. Any modifications to the CIMP approach if necessary will be reported at the next annual report.
11	MRP Part XII.I.1. (Page E-33)	The MRP states that a toxicity test sample is immediately subject to TIE procedures if either survival or sublethal endpoints demonstrate a Percent Effect value equal to or greater than 50% at the Instream Waste Concentration. The draft CIMP does not propose to perform a TIE when at least a 50% sublethal effect is seen but instead proposes to first collect a confirmatory sample two weeks later. This is not an acceptable approach. The CIMP seems to be implying that chronic toxicity has some inherent non-persistent quality to it that makes the results unreliable. It also implies that chronic toxicity is of lesser importance. Although, toxicity is of lesser importance. Although it would be hard to generalize to all possible situations, the pollutant concentration but are impacted in terms of growth or reproduction means that the population as a whole will be impacted, and could eventually collapse. Some species living in the receiving water have a very short lifespans and during critical times of the year may be prey for other organisms that will in turn be impacted by their population decline.	The TIE language was modified to be consistent with current proposed County-wide approach. However, we understand that the Regional Board is reviewing and discussing the Toxicity implementation with other Groups. Therefore, we will modify the approach to be consistent with the outcome of those.

Comment	CIMP Reference/ MRP Element/Reference (Attachment E)	Regional Board Comment and Necessary Revision	Response Comments/Notes
		Additionally, the toxicity flowcharts do not show the need to proceed to outfall toxicity testing should a TIE of a toxic receiving water sample be inconclusive and instead places focus on the response to non-persistent toxicity. While development of the proposed Discharge Assessment Plan (DAP) will be useful, it cannot take the place of the required outfall toxicity monitoring following an inconclusive TIEs in the receiving water. And, while there may be situations where TIEs cannot be resolved due to non-persistent toxicity and no further action on that sample can be pursued, inconclusive TIEs often result from a lack of following well-defined procedures rather than non-persistent toxicity. As mentioned elsewhere in this comment letter, including pyrethroids in the TIE procedure will reduce the occurrence of inconclusive TIEs as will including chemical testing for Fipronil and its degradates for comparison to U.S. EPA benchmarks. We strongly recommend a more cohesive approach whereby the Group would develop a Toxicity Assessment Plan analogous to the Discharge Assessment Plan currently proposed in the CIMP.	
12	Suggested Special Study	The 2013 study released by the California Stormwater Quality Association (CASQA) entitled "Review of Pyrethroid, Fipronil and Toxicity Monitoring Data from California Urban Watershed" reviewed stormwater data from studies conducting during 2005 – 2012 and highlighted the toxicity impacts from use of pesticides not currently required to be monitored by the MRP. We suggest the group begin monitoring fro these chemicals in the receiving water and, in addition, assess toxicity using the 2002 acute toxicity testing protocol (EPA-821-R-02-012) with the amphipod *Hyalella azteca* as the test organism. *Hyalella* is known to be much more sensitive to pythroids than is *Ceriodaphnia* while the latter is useful for its sensitivity to OP pesticides. The two species together may also prove to be more useful in detecting toxicity from Fipronil. And, should 50% or greater effect be detected in the toxicity test, we suggest a procedure to incorporate pyrethroids into the subsequent TIE be documented (three possible treatments have been identified by researchers, see http://www.pubfacts.com/detail/20018342/Focused-toxicity-identification-evaluations-to-rapidly-identify-the-cause-of-toxicity-in-environment). While Fipronil does not have a TIE procedure identified currently, chemical testing for parameter (and degradates) and comparison to U.S. EPA Office of Pesticide Program's aquatic life benchmarks at http://www.epa.gov./oppefed1/ecorisk_ders/aquatic_life)benchmark.htm will aid in determining the causes of toxicity in order to follow up with outfall testing of the parameter(s) with the ultimate goal of removing the source. This approach will also help minimize inconclusive TIE results which would lead to required toxicity testing in a representative upstream outfall.	Based on the CASQA study, Fipronil is a constituent the ESGV Group may consider for further investigation if toxicity is observed and TIEs are inconclusive. Therefore, the Group will evaluate data to be collected prior to electing to conduct a special study.

April 28, 2015

Permittees of the East San Gabriel Valley Watershed Management Group[1]

APPROVAL, WITH CONDITIONS, OF THE EAST SAN GABRIEL VALLEY GROUP'S WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Permittees of the East San Gabriel Valley Watershed Management Group:

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board or Board) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, LA County MS4 Permit). Part VI.C of the LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or an Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E and Attachments L through R (Total Maximum Daily Load Provisions), and by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures), except the Planning and Land Development Program. Pursuant to Part VI.C.4.c of the LA County MS4 Permit, the Permittees of the East San Gabriel Valley Watershed Management Group (ESGV WMG) jointly submitted a draft WMP dated June 27, 2014, to the Los Angeles Water Board for review.

Public Review and Comment

On July 3, 2014, the Board provided public notice and a 46-day period to allow for public review and comment on the ESGV WMG's draft WMP. A separate notice of availability regarding the draft WMPs, including the ESGV WMP, was directed to State Senators and Assembly Members

[1] Permittees of the East San Gabriel Valley Watershed Management Group include the cities of Claremont, La Verne, Pomona, and San Dimas. See attached distribution list.

within the Coastal Watersheds of Los Angeles County. The Board received two comment letters that had comments on WMPs generally, which were in part applicable to the ESGV WMG draft WMP. One joint letter was from Natural Resources Defense Council (NRDC), Heal the Bay, and Los Angeles Waterkeeper, and the other letter was from the Construction Industry Coalition on Water Quality (CICWQ). On October 9, 2014, the Board held a workshop at its regularly scheduled Board meeting on the draft WMPs. The Board also held a public meeting on April 13, 2015 for permittees and interested persons to discuss the revised draft WMPs with the Executive Officer and staff. During its initial review and its review of the revised draft WMP, the Los Angeles Water Board considered those comments applicable to the ESGV WMG's proposed WMP.

Los Angeles Water Board Review

Concurrently with the public review, the Los Angeles Water Board, along with U.S. EPA Region IX staff, reviewed the draft WMPs. On October 27, 2014, the Los Angeles Water Board sent a letter to the ESGV WMG detailing the Board's comments on the draft WMP and identifying the revisions that needed to be addressed prior to the Board's approval of the ESGV WMG's WMP. The letter directed the ESGV WMG to submit a revised draft WMP addressing the Los Angeles Water Board's comments. Prior to the ESGV WMG's submittal of the revised draft WMP, Board staff had a meeting on January 13, 2015 with ESGV WMG representatives and consultants, and several follow-up teleconferences and e-mail exchanges, to discuss the Board's comments and the revisions to the draft WMP, including the supporting reasonable assurance analysis (RAA), which would address the Board's comments. The ESGV WMG submitted its revised draft WMP on January 28, 2015 for Los Angeles Water Board review and approval.

Approval of WMP, with Conditions

The Los Angeles Water Board hereby approves, subject to the following conditions, the ESGV WMG's January 28, 2015, revised draft WMP. The Board may rescind this approval if all of the following conditions are not met to the satisfaction of the Board within the timeframe provided below.

1. Correct Tables 3-3 and 5-5 of the revised draft WMP by removing reference to the dry-weather copper waste load allocations (WLAs). The East San Gabriel Valley Permittees' MS4 discharges are not subject to the dry-weather copper WLAs in the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL (Attachment P of the LA County MS4 Permit) assigned to discharges to the San Gabriel River Reach 1 and San Gabriel River Estuary.[2]

[2] According to the TMDL, dry-weather WLAs for copper are assigned to San Gabriel River Reach 1 and Coyote Creek and its tributaries to meet the copper TMDL in the Estuary. No dry-weather copper WLAs are required for San Gabriel River Reaches 2, 3, 4, 5, San Jose Creek, or Walnut Creek because they do not drain to the Estuary during dry weather. Dry-weather WLAs are assigned to San Jose Creek Reach 2 to meet the selenium TMDL in San Jose Creek Reach 1. (USEPA 2007)

2. Revise Table 4-3 of the revised draft WMP to include "Interagency coordination," "Hydromodification Control Plan," and "Sewage system maintenance, overflow, and spill prevention," which are requirements of the LA County MS4 Permit. (See Parts VI.A.2.a.viii, VI.A.4.a.iii, and VI.D.2, among others, regarding "interagency coordination"; Part VI.D.7.c.iv regarding "Hydromodification Control Plan"; and Parts VI.D.9.h.ix and VI.D.10.c-e regarding "sewer system maintenance, overflow, and spill prevention.")
3. Revise and separate Table 4-2 of the revised draft WMP, "Recently Constructed and Planned BMPs in the WMP Area," into two tables to clearly distinguish between: (a) those best management practices (BMPs) that are already constructed (providing the completion date for each), and (b) those BMPs that are planned (providing the scheduled completion date for each).
4. Clarify the responsibilities of each Permittee of the ESGV WMG for implementation of watershed control measures in Table 5-17 of the revised draft WMP, "Control Measures to be Implemented for Attainment of 10% Milestone" and Table 5-18, "Schedule for Implementation of the Rooftop Runoff Reduction Program" to attain the 10% interim milestone in the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL.
5. Correct inconsistencies between Table 5-4 and Table 5-6 of the revised draft WMP, including: (a) information on selenium, which indicates exceedances downstream in Table 5-4 of the revised draft WMP, but indicates that no reductions are necessary in Table 5-6, and (b) missing information on E. coli exceedances in Table 5-4.
6. Revise Appendix D of the revised draft WMP to include: (a) both the geometric mean water quality objective (126/100 mL) and the single sample maximum water quality objective (235/100 mL) for E. coli density and (b) a table of the water quality-based effluent limitations (WQBELs) applicable to the ESGV WMG for lead, selenium, total nitrogen, total phosphorus, total mercury, total PCBs, total chlordane, dieldrin, total DDT, and 4,4-DDT as set forth in Attachment P of the LA County MS4 Permit.
7. Confirm in the revised draft WMP that Permittees of the ESGV WMG shall implement permit provisions in Part III Discharge Prohibitions and Part VI.D Stormwater Management Program Minimum Control Measures as set forth in the LA County MS4 Permit, unless noted otherwise in the revised draft WMP.
8. Provide in an Appendix the comparison of the volume reductions required by the load-based and volume-based numeric goals conducted as the initial step in the WMP Reasonable Assurance Analysis (RAA).

The ESGV WMG shall submit a final WMP to the Los Angeles Water Board that satisfies all of the above conditions no later than June 12, 2015.

Determination of Compliance with WMP

Pursuant to Part VI.C.6 of the LA County MS4 Permit, the ESGV WMG shall begin implementation of the approved WMP immediately. To continue to be afforded the opportunity to implement permit provisions within the framework of the WMP, Permittees must fully and timely implement all actions per associated schedules set forth in the approved WMP regardless of any contingencies indicated in the approved WMP (e.g., funding) unless a modification to the approved WMP, including any extension of deadlines where allowed, is approved by the Los Angeles Water Board pursuant to Part VI.C.6.a or Part VI.C.8.a.ii-iii. The Los Angeles Water Board will determine the ESGV Permittees' compliance with the WMP on the basis of the compliance actions and milestones included in the WMP, including, but not limited to, the following:

- Table 5-16 "Schedule of Control Measures and BMP Capacities to Interim Milestones for the ESGV WMP," which establishes the jurisdictional and subwatershed interim and final milestones for BMP capacities (in acre-feet);
- Table 5-17 "Control Measures to be Implemented for Attainment of 10% Milestone;" and
- Table 5-18 "Schedule for Implementation of the Rooftop Runoff Reduction Program."

Pursuant to Parts VI.C.3 and VI.E.2.d.i.(4)(a) of the LA County MS4 Permit, the ESGV Permittees' full and timely compliance with all actions and dates for their achievement in their approved WMP shall constitute compliance with permit provisions pertaining to applicable WQBELs/WLAs in Part VI.E and Attachment P of the LA County MS4 Permit. Further, per Part VI.C.2.b of the LA County MS4 Permit, the ESGV Permittees' full compliance with all requirements and dates for their achievement in their approved WMP constitutes compliance with the receiving water limitations provisions of Part V.A of the LA County MS4 Permit for the specific waterbody-pollutant combinations addressed by their approved WMP.

If the Permittees in the ESGV WMG fail to meet any requirement or date for its achievement in the approved WMP, which will be demonstrated through the ESGV WMG's Annual Reports and program audits (when conducted), the Permittees in the ESGV WMG shall be subject to the baseline requirements of the LA County MS4 Permit, including but not limited to demonstrating compliance with applicable receiving water limitations and TMDL-based WQBELs/WLAs through outfall and receiving water monitoring. See Parts VI.C.2.c and VI.E.2.d.i.(4)(c).

Annual Reporting

The ESGV WMG shall report on achievement of actions and milestones within the reporting year, as well as progress towards future milestones related to multi-year projects, through its Annual Report per Attachment E, Part XVIII of the LA County MS4 Permit. For multi-year efforts, the ESGV WMG shall include the status of the project, which includes the status with regard to standard project implementation steps. These steps include, but are not limited to, adopted or potential future changes to municipal ordinances to implement the project, site selection, environmental review and permitting, project design, acquisition of grant or loan funding and/or municipal approval of project funding, contractor selection, construction schedule, start-up, and effectiveness evaluation (once operational), where applicable. For all stormwater retention/infiltration projects, including the rooftop runoff reduction program, LID due to new/redevelopment, green streets, and regional BMPs, the ESGV WMG shall report annually on the volume of stormwater retained in each jurisdictional subwatershed area.

The ESGV WMG shall also include in its Annual Report the source(s) of funds used during the reporting year, and those funds proposed for the coming year, to meet necessary expenditures related to implementation of the actions identified in its WMP per Part VI.A.3 of the LA County MS4 Permit. Further, as part of the annual certification concerning a permittee's legal authority required by Part VI.A.2.b of the LA County MS4 Permit, each Permittee in the ESGV WMG shall also certify in the Annual Report that it has the necessary legal authority to implement each of the actions and milestones in the approved WMP as required by Part VI.C.5.b.iv.(6). If a Permittee does not have legal authority to implement an action or milestone at the time the ESGV WMG submits its Annual Report, the Permittee shall propose a schedule to establish and maintain such legal authority.

Adaptive Management

The ESGV WMG shall conduct a comprehensive evaluation of its WMP no later than April 28, 2017, and subsequently, every two years thereafter pursuant to the adaptive management process set forth in Part VI.C.8 of the Los Angeles County MS4 Permit. As part of this process, the ESGV WMG must evaluate progress toward achieving:

- Applicable WQBELs/WLAs in Attachment P of the LA County MS4 Permit according to the milestones set forth in its WMP;
- Improved water quality in MS4 discharges and receiving waters;
- Stormwater retention milestones; and
- Multi-year efforts that were not completed in the current year and will continue into the subsequent year(s), among other requirements.

The ESGV WMG's evaluation of the above shall be based on both progress implementing actions in the WMP and an evaluation of outfall-based monitoring data and receiving water data. Per Attachment E, Part XVIII.6 of the LA County MS4 Permit, the ESGV WMG shall implement adaptive management strategies, including but not limited to:

- Refinement and recalibration of the Reasonable Assurance Analysis (RAA) based on data specific to the ESGV WMP area that are collected through the ESGV WMG's Coordinated Integrated Monitoring Program and other data as appropriate;
- Identifying the most effective control measures, why they are the most effective, and how other control measures can be optimized based on this understanding;
- Identify the least effective control measures, why they are ineffective, and how the control measures can be modified or replaced to be more effective;
- Identify significant changes to control measures during the prior year(s) and the rationale for the changes; and
- Describe all significant changes to control measures anticipated to be made in the next year(s) and the rationale for each change.

As part of the adaptive management process, any modifications to the WMP, including any requests for extension of deadlines not associated with TMDL provisions, must be submitted to the Los Angeles Water Board for review and approval. The Permittees of the ESGV WMG must implement any modifications to the WMP upon approval by the Los Angeles Water Board or its Executive Officer, or within 60 days of submittal of modifications if the Los Angeles Water Board or its Executive Officer expresses no objections. Note that the Permittees' Report(s) of Waste Discharge (ROWD) is due no later than July 1, 2017. To align any modifications to the WMP proposed through the adaptive management process with permit reissuance, results of the first adaptive management cycle should be submitted in conjunction with the Permittees' ROWD.

The Los Angeles Water Board appreciates the participation and cooperation of the ESGV WMG in the implementation of the LA County MS4 Permit. If you have any questions, please contact Ivar Ridgeway, Storm Water Permitting, at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosure: Distribution List

EAST SAN GABRIEL VALLEY WMG DISTRIBUTION LIST		
Name	City	Email Address
Latoya Cyrus	San Dimas	lcyrus@ci.san-dimas.ca.us
Loretta Mustafa	Claremont	lmustafa@ci.claremont.ca.us
Kathleen Trepa	Claremont	ktrepa@ci.claremont.ca.us
Brian Desatnik	Claremont	bdesatnik@ci.claremont.ca.us
Cari Sneed	Claremont	csneed@ci.claremont.ca.us
Lisa O'Brien	La Verne	lobrien@ci.la-verne.ca.us
Rafferty Wooldridge	La Verne	rwooldridge@ci.la-verne.ca.us
Julie Carver	Pomona	julie_carver@ci.pomona.ca.us
Meg McWade	Pomona	Meg_McWade@ci.pomona.ca.us

CITY OF CLAREMONT

Community Development Department

City Hall
207 Harvard Avenue
P.O. Box 880
Claremont, CA 91711-0880
FAX (909) 399-5327
www.ci.claremont.ca.us

Building • (909) 399-5471
Planning • (909) 399-5470
Engineering • (909) 399-5465
Community Improvement • (909) 399-5467
Administration • (909) 399-5321

June 12, 2015

VIA Regional Website

Regional Water Quality Control Board
Los Angeles Region
Attention: Ivar K. Ridgeway, Senior Environmental Scientist
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Mr. Ridgeway,

The East San Gabriel Valley Watershed Management Group (ESGVWMG) comprises the Cities of Claremont, La Verne, Pomona and San Dimas. Pursuant to the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit (NPDES Permit No. CAS004001; Order No. R4-2012-0175), ESGVWMG hereby submits the revised final Watershed Management Program (WMP) Plan, per the conditional approval letter dated April 28, 2015.

The Group would like to re-emphasize that while it is committed to carrying out the components of the WMP and CIMP, funding for projects and monitoring will be an obstacle for our agencies until a long term solution is realized.

The ESGVWMG appreciates the assistance provided by the Regional Board, and we look forward to working with the Board staff during the CIMP and WMP implementation and adaptive management process. Please contact the respective City Staff member listed below with any questions you may have.

- Loretta Mustafa – City of Claremont, (909) 399-5474
- Lisa O'Brien – City of La Verne, (909) 596-8741
- Julie Carver – City of Pomona, (909) 620-3628
- Latoya Cyrus – City of San Dimas, (909) 394-6244

Sincerely,

Loretta Mustafa
City Engineer

Cc: Lisa O'Brien, City of La Verne
Julie Carver, City of Pomona
Latoya Cyrus, City of San Dimas

Attachment: Revised Final ESGVWMG Watershed Management Program (WMP) Plan

June 2015

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Final Watershed Management Program (WMP) Plan

Prepared by

East San Gabriel Valley Watershed Management Group
(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

Executive Summary

The Cities of Claremont, La Verne, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a Notice of Intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) for Los Angeles County (County), as adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective on December 28, 2012. This WMP is a requirement of the Permit and presents an approach for compliance with the Permit.

The level of effort and funding needed to implement the best management practices (BMPs) identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these required budget increases will not be possible.

IDENTIFICATION OF WATER QUALITY PRIORITIES

The water quality prioritization determines which pollutants are of concern for the waterbodies in the WMP area and the water body-pollutant combinations (WBPCs) which will be addressed within the Group's area. The Permit defines three categories of WBPCs to be used:

- **Category 1** are those subject to an established Total Maximum Daily Load (TMDL);
- **Category 2** are those on the 303(d) list or those that have sufficient exceedances to be listed; and
- **Category 3** for those with observed exceedances but too infrequent to be listed.

Subcategories of the WBPCs were identified to refine the prioritization process based on the frequency, timing, and magnitude of exceedances.

WATERSHED CONTROL MEASURES

The focus of the WMP is on the identification of sufficient amount and types of BMPs to meet receiving water and effluent limitations set forth in the Permit. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP selection is to reduce the impact of stormwater and non-stormwater on receiving water quality.

To support WMP development, a nomenclature for BMPs was established based on two main categories of structural BMPs: regional BMPs and distributed BMPs. Multiple regional and distributed BMPs were identified by the Group for consideration in the WMP. The ESGV Group will implement provisions in Part III - Discharge Prohibitions and Part VI.D - Stormwater Management Program Minimum Control Measures (MCMs) as set forth in the Permit.

REASONABLE ASSURANCE ANALYSIS

The Reasonable Assurance Analysis (RAA) was conducted with the Watershed Management Modeling System (WMMS). The RAA is a key element of the WMP, used to provide confidence in the effectiveness of BMPs, and support BMP scheduling.

WMP compliance will be determined on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with receiving water limitations (RWLs) and water quality based effluent limitations (WQBELs) of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals. However, the cities are provided flexibility to modify the suite of BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the Coordinated Integrated Monitoring Program (CIMP), indicate that less extensive BMP implementation is needed to achieve Permit limitations.

To establish an initial scenario for BMP implementation to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the right-of-way (ROW), public parcels, and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) for new development and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs may be retained with regional BMPs.

Based on RAA modeling, the BMP capacity necessary to retain the 85th percentile design storm volume for the WMP area is approximately 544 acre-feet. During WMP implementation, ROW BMPs other than green streets may be selected, such as dry wells. As part of the adaptive management process, the capacity of non-ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

SCHEDULING OF CONTROL MEASURES

The San Gabriel River Metals TMDL is used as the primary schedule for BMP implementation for the ESGV Group. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. For the 10% milestone, a suite of control measures are identified that will be implemented by 2017 including non-structural BMPs, a Rooftop Runoff Reduction Program, and recently constructed and planned structural BMPs. Each of the control measures identified for the 10% milestone are enhanced compared to implementation levels that existed prior to the new Permit. Attainment of the design storm volumes to address the final limits of the San Gabriel River Metals TMDL will also address all other TMDLs in the WMP area.

ADAPTIVE MANAGEMENT PROCESS

The WMP is intended to be implemented as an adaptive program as new program elements are implemented and information is gathered over time. The WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to addressing changing conditions and maintaining effectiveness going forward. This process is repeated every two years following the final approval of the WMP.

IMPLEMENTATION PROCESS

With sufficient time, the BMP networks identified in the WMP could be implemented and the neighborhoods of the ESGV Group could be enhanced with green infrastructure to effectively manage stormwater. Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of BMP implementation. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP. The ultimate goal is appropriate protection of beneficial uses.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

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LIST OF ACRONYMS AND ABBREVATIONS

BMP	Best Management Practice
CALTRANS	California Department of Transportation
CEDEN	California Environmental Data Exchange Network
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
County	County of Los Angeles
CWH	Council for Watershed Health
ESCP	Erosion and Sediment Control Plan
ESGV	East San Gabriel Valley
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
Group	East San Gabriel Valley Watershed Management Group
IC/ID	Illicit Connection/Illicit Discharge
L-SWPPP	Local Stormwater Pollution Prevention Plan
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LID	Low Impact Development
LSPC	Loading Simulation Program in C++
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NIMS	Nonlinearity-Interval Mapping Scheme
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated Biphenyl
Permit	Order No. R4-2012-0175, NPDES Permit No. CAS004001
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
ROW	Right-of-Way
RWL	Receiving Water Limitation
SUSMP	Standard Urban Stormwater Mitigation Program
SUSTAIN	System for Urban Stormwater Treatment and Analysis Integration
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCM	Watershed Control Measure
WMMS	Watershed Management Modeling System
WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQO	Water Quality Objectives

1 Introduction

1.1 BACKGROUND AND REGULATORY FRAMEWORK

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Order No. R4-2012-0175 (Permit) was adopted November 8, 2012 by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in Los Angeles County (County) are not causing or contributing to exceedances of water quality objectives (WQOs) set to protect the beneficial uses in the receiving waters in the Los Angeles region.

The Cities of La Verne, Claremont, Pomona, and San Dimas, collectively referred to as the East San Gabriel Valley Watershed Management Group (ESGV Group or Group), submitted a notice of intent (NOI) to develop a Watershed Management Program (WMP) to fulfill the requirements of the Permit. This WMP complies with Part VI.C.5-C.8 of the Permit as listed below:

(i) Prioritizes water quality issues resulting from storm water and non-storm water discharges from the MS4 to receiving waters within the Group's area;
(ii) Identifies and implements strategies, control measures, and best management practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d of the Permit;
(iii) Modifies strategies, control measures, and BMPs as necessary based on analysis of monitoring data to ensure that applicable water quality-based effluent limitations (WQBELs) and receiving water limitations (RWLs) and other milestones set forth in this WMP are achieved in the required timeframes;
(iv) Provides appropriate opportunity for meaningful stakeholder input.

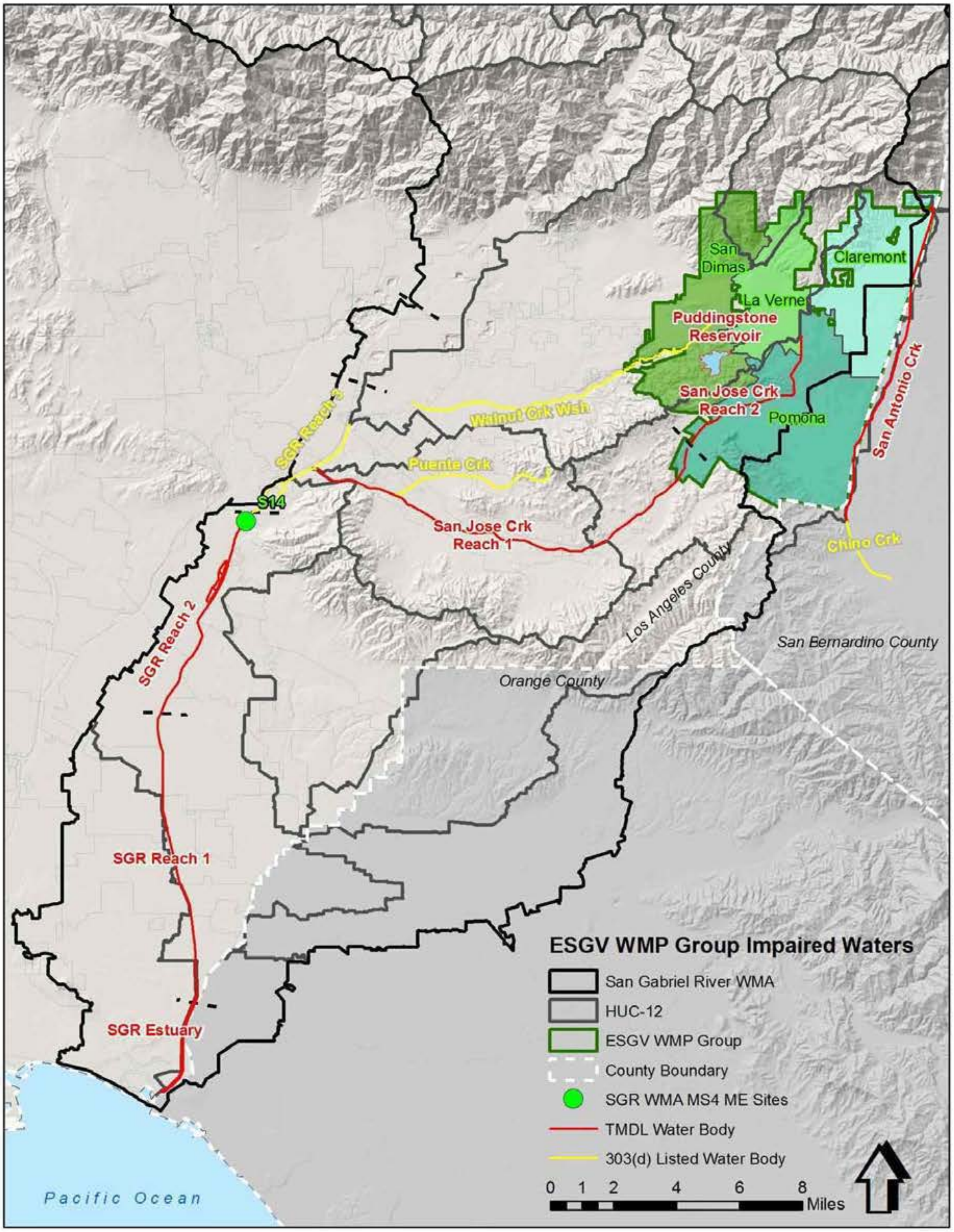
1.2 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP

The San Gabriel River Watershed encompasses 682 square miles of eastern Los Angeles County, northwest Orange County, and southwest San Bernardino County. The San Gabriel River has a main channel length of approximately 58 miles, and the main tributaries of the San Gabriel River are Walnut Creek, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek in the Santa Ana River Watershed. The Group's area is located in the Northeastern part of the San Gabriel River Watershed. **Figure 1-1** depicts the geographical scope covered by the ESGV Group. **Table 1-1** shows the land area distribution by each jurisdiction for the ESGV Group, not including the Angeles National Forest.

Table 1-1
East San Gabriel Valley Watershed Management Group Area by Permittee

Jurisdiction	Land Area (Acres)	Percent
City of Claremont	8,619	22.3%
City of La Verne	5,454	14.1%
City of Pomona	14,701	38.0%
City of San Dimas	9,865	25.5%
TOTAL	**38,639**	**100%**

Figure 1-1
Map of Los Angeles County Showing the Locations of the
San Gabriel River Watershed and the ESGV Group Area



1.3 STAKEHOLDER PARTICIPATION

The ESGV Group is committed to providing the opportunity for meaningful stakeholder input throughout the development of the WMP. The ESGV Group has participated in working groups that were developed to facilitate collaboration among stakeholders and the technical team, including the Technical Advisory Committee. Informational flyers have been developed for distribution in City Halls, during community events, and posted online to solicit community input. Additional presentations have been provided at City Council meetings and on city websites that are televised to distribute information regarding Permit compliance to stakeholders.

2 Watershed Characterization

2.1 GEOGRAPHICAL DESCRIPTION

The San Gabriel River encompasses 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks of the river. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek. Areas of Claremont and Pomona also drain to San Antonio Creek and Chino Creek in the Santa Ana River Watershed. The WMP area is located in the upper portion of the San Gabriel River Valley. **Figure 1-1** shows the jurisdictional boundaries and nearby water bodies.

2.1.1 Geology

The geology underlying the area of the San Gabriel River Watershed in the ESGV Group can be subdivided into three general types of geologic materials:

- Bedrock materials in the steep upper portion of the watershed in the Angeles National Forest in the San Gabriel Mountains
- Sedimentary materials comprising valley fill emanating from alluvial fans from the San Gabriel Mountains
- Marine sedimentary deposits which comprise the San Jose and Puente Hills

The bedrock materials of the San Gabriel Mountains consist of igneous and metamorphic rocks which have been uplifted by faulting to form steep ridges and valleys in the upper portion of the watershed. These rocks are generally impermeable and transmit only small quantities of water through fractures.

The sedimentary materials which comprise the flatter areas of the valley are comprised of alluvial fan and fluvial deposits. These deposits tend to be very permeable, especially near the northern portions of the valley adjacent to the San Gabriel Mountains. The valley fill materials consist of interbedded silt, sand and gravels. The numerous gravel pits in the valley are located in these deposits. The deposits represent the most promising areas for regional infiltration facilities. During dry weather, surface water from the San Gabriel Mountains infiltrates rapidly into these deposits, providing a hydraulic separation between the lower portions of the watershed.

The sedimentary deposits which form the upland areas of the San Jose Hills adjacent to Puddingstone Reservoir consist of marine sandstone, siltstone, and shale. Because these deposits are fine-grained and consolidated, they have relatively low permeability. Aside from the disadvantages of higher elevation and relatively steep slopes, they represent poor areas for infiltration because of their expected low permeability.

2.1.2 Groundwater Basins

The alluvial and fluvial valley-fill deposits in the flatter areas of the watershed from several groundwater basins which underlie the WMP area. The western portion of San Dimas underlies

the Main San Gabriel Groundwater Basin. This groundwater basin is an important source of water supply, with a typical production of 250,000 acre-feet of water per year. The basin is adjudicated and actively managed by the Main San Gabriel Watermaster. Groundwater flow is generally from east to west across the basin, then southward into the Central Basin through the Montebello Forebay. There are numerous existing facilities for capture of stormwater in the Main San Gabriel Basin operated by the Los Angeles County Department of Public Works and Los Angeles County Flood Control District (LACDPW and LACFCD). The groundwater basin contains a number of contaminant plumes stemming from past agricultural an industrial practices, including nitrate, volatile organic compounds, and perchlorate. These plumes could be significant in terms of planning regional BMPs if the volume a water infiltrated has the potential to adversely affect on-going remediation efforts.

The western portion of Pomona overlies the Chino Groundwater Basin, one of the larger groundwater basins in Southern California. Historical production in the Chino Basin averages approximately 150,000 acre-feet per year. In between these two relatively large groundwater basins are the Six Basins comprised of the Canyon, Upper and Lower Claremont Heights, Pomona, Live Oak, and Ganesha Basins. These basins underlie portions of La Verne, Claremont, and Pomona. Groundwater production from these basins has typically averaged approximately 18,000 acre-feet per year. These smaller basins are separated by generally northeast-trending faults which in some cases act as barriers to groundwater flow. South of the Six Basins is the Spadra Basin underlying the southern portion of Pomona. All of the nine groundwater basins underlying the area are adjudicated and actively managed by a watermaster except the Spadra Basin. The smaller basins also contain contaminant plumes stemming from past agricultural and industrial practices including nitrates, volatile organic compounds, and perchlorate.

A potentially important aspect of the groundwater basins that may have an impact on infiltration of large volumes of water are the presence of rising groundwater (cienegas) present in various locations in the Pomona Basin which are a concern for management of the basin. Basin water levels must be closely managed to avoid rising water and property damage. The Canyon Basin, cienegas of San Dimas, and Upper Claremont Heights Basin each experienced rising groundwater in the past. These areas of high groundwater should be avoided for large-scale infiltration facilities.

2.2 RAINFALL CONDITIONS

The semi-arid climate of the Los Angeles region creates distinct hydrology differences between the dry and wet seasons. The amount of rainfall is a key variable for water quality conditions and pollutant loadings from MS4 areas. To support WMP development, a rainfall analysis was performed by aggregating data from available rain gages across the San Gabriel River watershed. For comparison, other watersheds were also analyzed. The following key metrics were evaluated for comparison for the Group. These consist of: (1) total annual rainfall, and (2) average rainfall per wet day[1]. Average rainfall per wet day serves as a coarse indicator of rainfall intensity. The analysis covered 25 water years from 1987 through 2011—the total rainfall for each precipitation gage was aggregated into annual totals based on water year (i.e. October through September).

[1] Wet days defined as days having greater than 0.1 inches of rainfall.

For WMP development, the last 10 years of available data is used to develop the Reasonable Assurance Analysis (RAA) (Section 5). As shown in **Table 2-1**, the most recent 10 years were compared to the overall 25 years of record. Both the average and 90th percentile values were compared across the 10- and 25-year records. For the San Gabriel River Watershed, water year 2008 was a representative average year based on both rainfall metrics (19.4 inches per year and 0.76 inches per wet day compared to the average 20.7 and 0.72, respectively). Water year 2003 was approximately the 90th percentile rainfall per wet day and not greatly below the 90th percentile total rainfall (23 inches per year and 0.92 inches per wet day compared to the 90th percentile 37.8 and 0.92, respectively). As such, water year 2008 is a representative year for average conditions and water year 2003 is a representative year for critical wet conditions, which are important boundary conditions for the RAA (Section 5).

Table 2-1
Annual Rainfall in the San Gabriel River Watershed (Water Years 2002–2011 vs. 25-year Average)

Water Year	Average Rainfall Totals (inches/year)	Average Rainfall Per Wet Day (inches/wet day)
2002	30.6	0.42
2003	23	0.92
2004	13.7	0.66
2005	49.6	1.07
2006	17.9	0.64
2007	6.4	0.41
2008	19.4	0.76
2009	14.6	0.65
2010	24.1	0.82
2011	28.5	0.76
Average (1987-2011)	20.7	0.72
90th Percentile (1987-2011)	37.8	0.97

Yellow highlighted cells are the two years in each basin with the smallest difference from the 25-year average. Green cells have the smallest difference from 90th percentile of the 25-year record.

3 Identification of Water Quality Priorities

Water quality priorities establish which constituents are addressed by the WMP, and support prioritization and scheduling of WMP control measures. The Permit outlines a specific set of priorities based on Total Maximum Daily Loads (TMDLs), State Water Resources Control Board 2010 Clean Water Act Section 303(d) list, and evaluation of monitoring data. Data was obtained from numerous sources and analyzed to evaluate exceedances of WQOs. A summary of applicable WQOs is provided in **Appendix D**. Based on the analysis, water-body pollutant combinations (WBPCs) were identified and then were classified in one of the three categories as defined in the Permit. Category 1 applies if the WBPC is subject to an established TMDL; Category 2 applies if the WBPC is on the 3030(d) list, or has sufficient exceedances to be listed; and, Category 3 if observed exceedances, but not at a frequency to be listed.

3.1 WATER BODY-POLLUTANT RECEIVING WATER LIMITATION EXCEEDANCES

Monitoring data for sites within the San Gabriel River Watershed Management Area was obtained from the following sources:

- LACDPW long-term monitoring data from the San Gabriel River Mass Emission Stations S14 and S13.
- The Council for Watershed Health (CWH) monitoring data from monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN).
- The Los Angeles County Sanitation District long-term receiving water monitoring data.

Monitoring data site locations are depicted in **Figure 3-1**. The number of available data from all data sources, the number of data found above the minimum detection level, and the total number of constituents measured in a reach are summarized in **Table 3-1**. Data received from the CWH and CEDEN largely consisted of short-term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential WQO exceedances. A large number of monitoring sites were located in receiving waters downstream from the WMP area. To identify the potential water quality priorities in the WMP area, data reflective of receiving waters downstream from the WMP area were considered. It is not known at this time if the MS4 discharges from the WMP area are contributing to water quality issues observed in the downstream receiving water. Water quality priorities based on downstream conditions identified for consideration in the RAA is appropriate based on the available data. Through implementation of the Coordinated Integrated Monitoring Program (CIMP), the ESGV Group will establish receiving water monitoring sites at the WMP boundary and MS4 outfall monitoring sites within the WMP area. Evaluation of the data collected through the ESGV CIMP will provide a determination if the area is contributing to downstream exceedances of WQOs. The CIMP and WMP will be modified in two-year cycles to maintain the appropriate list of WQPs through adaptive management based on monitoring results.

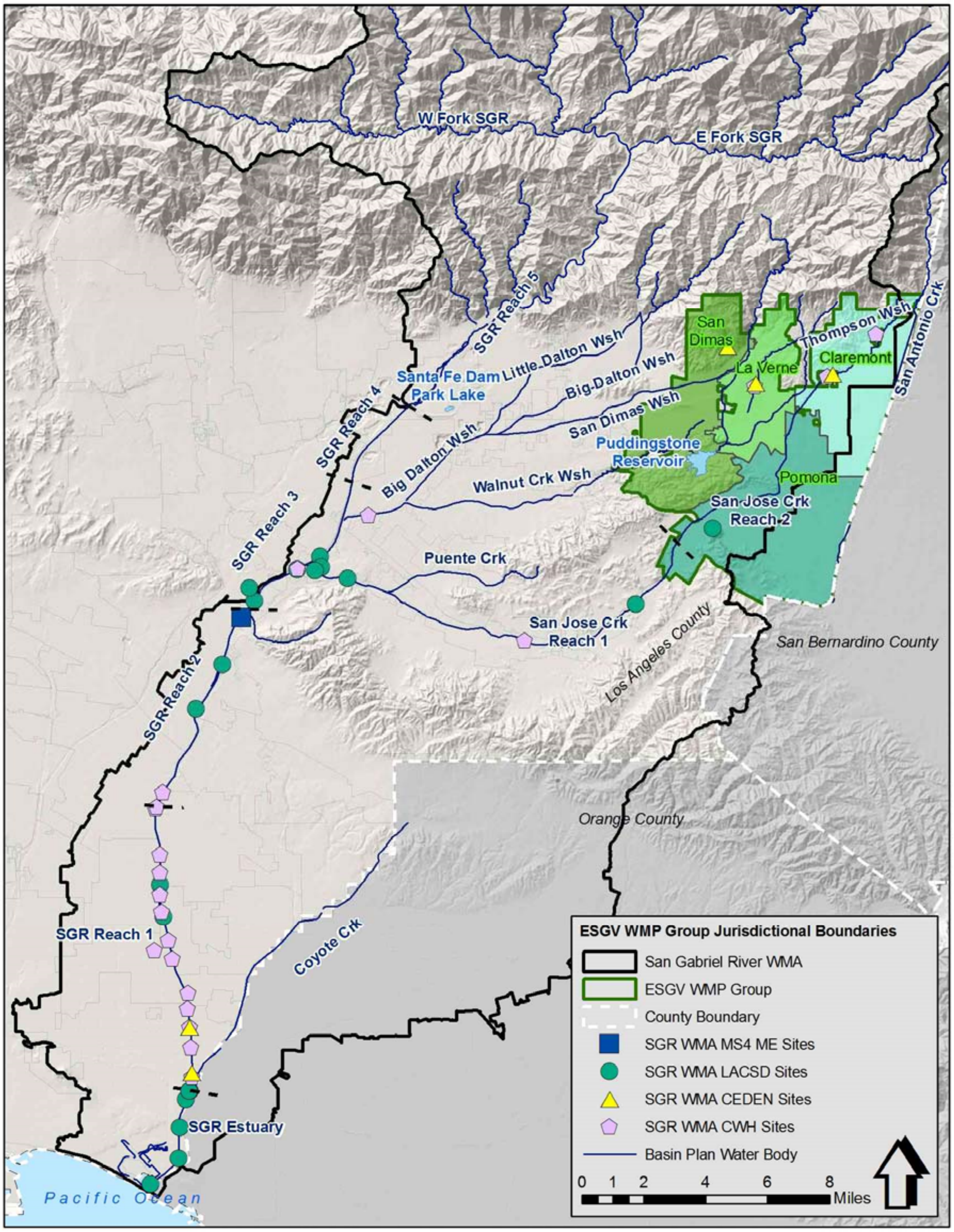


Figure 3-1

San Gabriel River Watershed water bodies, Regional Board reaches, and site locations with available water quality data. Monitoring programs with available data include: LACFCD MS4 Mass Emission (ME), Los Angeles County Sanitation District (LACSD), California Environmental Data Exchange Network (CEDEN), and Council for Watershed Health (CWH)

Table 3-1. Summary of Available Data for the San Gabriel River WMA

Reach	All Data (2002-2012)			Previous 5 Years (2007-2012)		
	Number of Analyses[1]	Number Detected[2]	Number of Constituents[3]	Number of Analyses[1]	Number Detected[2]	Number of Constituents[3]
San Gabriel River Estuary	30,598	16,026	318	12,127	4,991	177
San Gabriel River Reach 1	39,078	23,946	250	14,853	8,593	202
San Gabriel River Reach 2	10,692	3,222	251	4,732	1,513	195
San Gabriel River Reach 3	31,332	16,218	254	11,748	6,505	225
San Jose Creek Reach 1	27,439	12,348	245	12,354	6,536	203
San Jose Creek Reach 2	16,816	8,569	238	7,968	4,437	203
Walnut Creek	248	248	39	145	145	38
Thompson wash	67	65	40	0	0	0
San Dimas Wash	28	26	17	0	0	0
Big Dalton Wash	31	29	17	0	0	0
Puddingstone Reservoir[4]	28	28	17	0	0	0
Totals	156,357	80,725	419	63,927	32,720	249

1 Total number of analyses performed.
2 Number of analyses where the constituent was present in the sample above the minimum detection level.
3 Number of distinct constituents. Total copper and dissolved copper are counted as distinct constituents.
4 Including tributaries to the named water body

During dry-weather, the water bodies in the WMP area may be hydraulically disconnected from the lower sections of the watershed due to the rapid infiltration over soft bottom channels. Additionally, the CIMP contains a non-stormwater outfall program to address significant dry-weather flows from the MS4 system. Monitoring performed under the CIMP will provide information to support a determination of whether the discharges are affecting the water quality downstream of the WMP area.

The water quality data was compared to WQBELs or WQOs, to determine if the constituent exceeds the limitations. The analysis was performed with both the past ten years and the past five years of data. The two time periods were analyzed to determine if exceedances are current issues, or if they were historic problems rectified through implementation of the SUSMP. Constituents that had no observed exceedances in the past five years or those that would not meet the 303(d) listing criteria for impairment could be considered for removal from the WBPC list.

3.2 ESGV GROUP WATER QUALITY PRIORITIES

Subcategories of the three Permit defined categories were created to refine the prioritization process. Those pollutants with measurements exceeding WQOs were further evaluated and categorized based on the frequency and timing of exceedances. Category 1 constituents are divided in subclasses based on whether the TMDL is from USEPA, has effective final limitations, and if there are observed exceedances in last five years of data. Category 2 and 3 are each divided based

on whether the constituent is a pollutant, and if there are observed exceedances in last five years of data. The subcategories are listed and described in detail in **Table 3-2**. As determined by the data analysis, the WBPCs are placed in the respective subcategories and listed in
Table 3-3. Constituents may change subcategories based on future monitoring in the WMP area, source investigations occur, and BMP implementation.

Table 3-2
Details for Water Body-Pollutant Combination Subcategories

Category	Water Body-Pollutant Combinations (WBPCs)	Description
1	**Category 1A:** WBPCs with past due or current Permit term TMDL deadlines with exceedances in the past 5 years.	WBPCs with TMDLs with past due or current Permit term interim and/or final limits. These pollutants are the highest priority for the current Permit term.
	Category 1B: WBPCs with TMDL deadlines beyond the Permit term with exceedances in the past 5 years.	The Permit does not require the prioritization of TMDL interim and/or final deadlines outside of the Permit term or USEPA TMDLs, which do not have implementation schedules. To ensure WMPs consider long term planning requirements and utilize the available compliance mechanisms these WBPCs should be considered during BMP planning and scheduling, and during CIMP development.
	Category 1C: WBPCs addressed in USEPA TMDL without a Regional Board Adopted Implementation Plan.	
	Category 1D: WBPCs with past due or current Permit term TMDL deadlines but have not exceeded in past 5 years.	WBPCs where specific actions may end up not being identified because recent exceedances have not been observed and specific actions may not be necessary. The CIMP should address these WBPCs to support future re-prioritization.
	Category 1E: WBPCs with future Permit term TMDL deadlines but have not exceeded in past 5 years.	
2	**Category 2A:** 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements with exceedances in the past 5 years.	WBPCs with confirmed impairment or exceedances of RWLs. WBPCs in a similar class[1] as those with TMDLs are identified. WBPCs currently on the 303(d) List are differentiated from those that are not to support utilization of WMP compliance mechanisms.
	Category 2B: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment or exceedances is not resolved. Either routine monitoring or special studies identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 2C: 303(d) Listed WBPCs or WBPCs that meet 303(d) Listing requirements but have not exceeded in past 5 years.	WBPCs where specific actions for implementation may not be identified because recent exceedances have not been observed. Pollutants that are in a similar class[1] as those with TMDLs are identified. Routine monitoring identified in the CIMP should ensure these WBPCs are addressed to support re-prioritization in the future.
3	**Category 3A:** All other WBPCs with exceedances in the past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.
	Category 3B: All other WBPCs that are not a "pollutant"[2] (i.e., toxicity).	WBPCs where specific actions may not be identifiable because the cause of the impairment is not resolved. Routine monitoring identified in the CIMP should support identification of a "pollutant" linked to the impairment and re-prioritization in the future.
	Category 3C: All other WBPCs but have not exceeded in past 5 years.	Pollutants that are in a similar class[1] as those with TMDLs are identified.

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 While one or more pollutants may be contributing to the impairment, it currently is not possible to identify the specific pollutant/stressor.

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

Continued

Table 3-3
Summary of San Gabriel River Watershed Water Body-Pollutant Combination Categories (continued)

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).
2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.
3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.
Note that unless explicitly stated as sediment, constituents are associated with the water column.
I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.
303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

4 Watershed Control Measures

This section describes structural and non-structural control measures existing or planned in the ESGV Group area.

4.1 STRUCTURAL BMP DATA COMPILATION

Development of the WMP requires identification of watershed control measures, also referred to as BMPs, that are expected to be sufficient to meet receiving water and effluent limitations set forth in the Permit. The overarching goal of BMPs in the WMP is to reduce the impact of stormwater and non-stormwater on receiving water quality. This subsection describes efforts to develop consistent nomenclature for structural BMPs, and efforts to compile data regarding existing and planned regional BMPs.

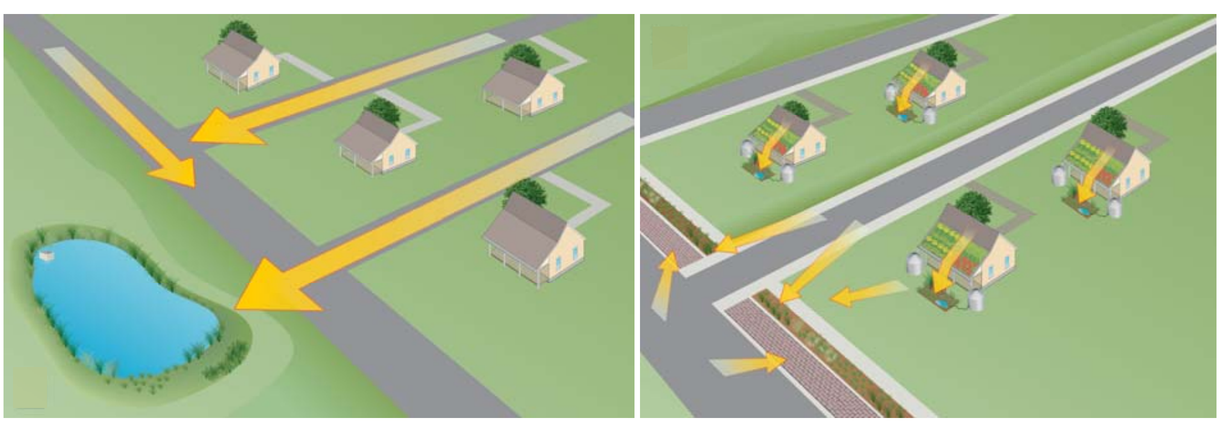
The two main categories of structural BMPs to be implemented by the WMP include regional and distributed (**Figure 4-1)**, as follows:

- **Regional BMPs:** Constructed structural practices intended to treat runoff from a contributing area of multiple parcels (normally on the order of 10s or 100s of acres or larger). Regional BMPs may be constructed within a single jurisdiction or across multiple jurisdictions.

- **Distributed BMPs:** Constructed structural practices intended to treat runoff relatively close to the source and typically implemented at a single- or few-parcel level (normally less than one acre).

Note that regional BMPs are not necessarily able to capture the 85th percentile, 24-hour storm. The subset of regional BMPs that capture the 85th percentile, 24-hour storm, are referred to as "Regional WMP Projects". Drainage areas that are captured with a Regional WMP Project are expected to be considered in compliance with interim and final TMDL limits.

Figure 4-1
Conceptual Schematic of Regional (left) and Distributed (right) BMP Implementation Approaches



4.1.1 Structural BMP Subcategories

Regional and distributed BMPs were separated into subcategories as shown in **Table 4-1**. This nomenclature is used herein to compile and describe information on existing, planned, and potential BMPs.

Table 4-1
Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water or divert to the sanitary sewer.
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips and vegetated swales)
		Rainfall harvest (cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

4.1.2 Existing BMPs in the WMP Area

Regional BMPs will be a critical component of the WMP. Individual Group Members provided summaries of existing and planned BMPs. In addition, a literature review was performed to identify further structural BMP projects that were not encompassed by the data provided. The literature review included Integrated Regional Watershed Management Plan documents, and the Notice of Intent (NOI). A summary of planned and recently-constructed BMPs, by jurisdiction, is presented in **Table 4-2**. Calculated capacities are included, if available.

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
Claremont	Drywell/Filter	Citrus Glen @ Pitzer Ranch	3.31 acres	926 W. Baseline Road		Planned – In Construction	July 2015
Claremont	Detention/Infiltration Tank, Trench Drain	Claremont Village Lofts	1.66 acres	127 Oberlin	4,815 cubic feet per acre	Planned	December 2017
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin That Empties Out After A Storm	Gilead		Wheeler Avenue and Puddingstone Drive		Planned	May 2016
Pomona	Infiltration Trench	Charisma Life Church	0.35 Acres	305 E. Arrow Highway	2400 cubic feet	Planned	NA
Pomona	Vegetated Swale, Filtera Units	Pomona Valley Hospital Medical Center	9.1 Acres	1798 N. Garey Ave.		Planned	NA
Pomona	Infiltration Basin, Drain Inserts	Metrolink	3.25 Acres	2704 N. Garey Ave.		Planned	2015
Pomona	vegetated swales, infiltration trenches, clarifier, grate inlet/media filtration devices	Pomona Valley Transfer Station	10.2 Acres	1371 E Ninth Street	3817 cubic feet	Planned	June 2015
Pomona	Vortex separator, infiltration trenches	Mission 71 Bldgs P, Q, R, S	23.4 Acres	1875 Mission Blvd	36106 cubic feet	Planned	2015

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
Pomona	swales, infiltration	Jefferson Park (Phil & Nell Soto Park) (Planned)	2 Acres	Orange Grove Ave at Park Ave and Jefferson Ave		Planned	NA
San Dimas	Infiltration (Percolation) Trench	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.293 acres. Peak Mitigation Flow Rate: Qpm=0.08 cfs; Max Volume: 711 ft^3	Planned	NA
San Dimas	Biofilter - Grass Swale	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy	Subarea: 0.181 acres. Qpm=0.05 cfs	Planned	NA
San Dimas	water quality inlet - FloGard	San Dimas Surgical Medical Center	0.56 Acres	1359 W Arrow Hwy		Planned	NA
San Dimas	Bioswale Retention Basin	Care Meridian: Via Verde Rehab Center	1.8 Acres	1136 & 1148 Puente Street	Measuring 126 feet x 68 feet	Planned	January 2016
San Dimas	Perforated Pipe - Retention	Tract 71259:	1.03 Acres	301 S San Dimas Avenue	Measuring length= 147 L.F. and diameter = 48"	Planned	August 2015
San Dimas	Basin 7 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,082 square feet (Anticipated to treat 20.12 acres)	Planned	August 2016

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
San Dimas	Basin 8 Bioretention	Brasada NJD Development	270 Acres	North of Foothill Blvd	6,600 square feet (Anticipated to treat 39.32 acres)	Planned	August 2016
San Dimas	Modular Wetland Systems (MWS) 1-13	Brasada NJD Development	270 Acres	North of Foothill Blvd	3.37 CFS	Planned	August 2016
San Dimas	Bioswale (biofilter)	Lone Hill / Las Colinas Tract 60865	7.06 Acres	Lone Hill Avenue south of Gladstone and north of Saint George	0.204 CFS	Planned	August 2016
San Dimas	Infiltration	Walburn Development	9.8 Acres	San Dimas Ave North of Gladstone	TBD	Planned	2017
Claremont	Detention Basin/Vegetated Swale/Maxwell IV Drywell	Pomona College - 4th Street Walk	1.5 acres	101 N. College Avenue		Recently Constructed	October 2013
Claremont	Vegetated Swale	Claremont Toyota Service Building	0.2 acres	601 Auto Center Drive		Recently Constructed	April 2014
Claremont	Infiltration System (drywell)	Indian Hill Blvd and Vista	1.7 acres	Indian Hill Blvd. & Vista Dr.	3,920 cubic feet per acre	Recently Constructed	March 2015
La Verne	Bioretention	Oak Grove Walk		End of Dover at Valentine & Canopy		Recently Constructed	April 2015

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
La Verne	Infiltration (Dry) Well	Oak Grove Walk		End of Dover at Valentine & Canopy		Recently Constructed	April 2015
La Verne	Vegetated Swale	ULV Campus West		Wheeler Avenue and Puddingstone Drive	swale is 327' by 4' (1,308 s.f.)	Recently Constructed	March 2014
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	ULV Campus West		Wheeler Avenue and Puddingstone Drive		Recently Constructed	March 2014
La Verne	Infiltration (Dry) Well	Jack in the Box		Damien Avenue and Foothill Boulevard	System capacity 1,067 cubic feet	Recently Constructed	December 2014
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	Jack in the Box		Damien Avenue and Foothill Boulevard		Recently Constructed	December 2014
La Verne	Infiltration (Dry) Well	ULV Parking Lot S		A Street and Walnut Avenue	Retain 3/4 inch of 25 year storm, system capacity 9,424 cubic feet.	Recently Constructed	August 2014
La Verne	Filter - Geotextile Fabric Membrane (Vertical)	ULV Parking Lot S		A Street and Walnut Avenue		Recently Constructed	August 2014
La Verne	Detention Basin (Dry) - Surface Grass-Lined Basin That Empties to Stromdrain	Village La Verne		Foothill Boulevard and Bradford		Recently Constructed	May 2015

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
Pomona	Cultech Retention System, Cultech Filter	San Jose Elementary Parking Lot	0.38 Acres	2015 Cadillac Dr.	1146 cubic feet	Recently Constructed	2013
Pomona	Infiltration Trench	The Southern California Dream Center	1.23 Acres	1024 Phillips Blvd.	501 cubic feet	Recently Constructed	2013
Pomona	Infiltration Basins, Drain Inserts	Fremont Middle School Modernization	1.84 Acres	725 W. Franklin Ave.	2601 cubic feet	Recently Constructed	2013
Pomona	Pervious Pavement, Vegetated Buffer Strip, Drain Inserts	Chase E Bank	0.09 Acres	110 E. Foothill Blvd.	1064 cubic feet	Recently Constructed	April 2013
Pomona	Infiltration Basins, Vortex Separator	Rio Rancho Town Center	21.1 Acres	Rio Rancho Road	118,085 cubic feet	Recently Constructed	2014
Pomona	Infiltration Trench, Vortex Separator, Drain Inserts	Mission 71 Business - Building O	11.1 Acres	Tract Map No. 61428		Recently Constructed	December 2013
Pomona	Bio-retention planters (3)	Home Depot Outparcel (Meridian Pomona)	0.61 Acres	2703 S Towne Ave	1779 cubic feet	Recently Constructed	2014
Pomona	CDS Unit	Monterey Station	6.71 Acres	100 E Monterey Ave.	15834 cubic feet	Recently Constructed	2014
Pomona	Bio-retention facilities (2), vegetated swales	Pomona Ranch Plaza, Lot 7	10.78 Acres	75 Rancho Camino Dr		Recently Constructed	October 2014
Pomona	Infiltration Basins, Drain Inserts, Vortex separator	Mission 71 Business - Building LMN	10.12 Acres	1585 W. Mission Blvd.	23376 cubic feet	Recently Constructed	2014

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
San Dimas	Catch Basin #1&2 (piped to underground retention system constructed in Phase II)	Bonita Cyn Gateway-Shops Phase I	2.25 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Capacity calculated as 69.4 cubic feet per second (cfs)	Recently Constructed	November 2014
San Dimas	Underground Retention System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Treatment area = 6.27 acres	Recently Constructed	November 2014
San Dimas	Continuous Deflection Separator (CDS) System	Bonita Cyn Gateway-Residential Phase II	6.27 Acres	N/W Corner of Bonita and San Dimas Canyon Rd	Pretreatment of stormwater runoff	Recently Constructed	November 2014
San Dimas	Catch Basins with (2) Hydrodynamic Separators (CDS2015-4)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway	0.14 cfs (0.7 cfs each x 2)	Recently Constructed	November 2014
San Dimas	Thirteen (13) Kristar Fossil Filters (off site)	Grove Station Development (Village Walk) - Tract 66251 Phase II	2.3 Acres	N/E Corner San Dimas Avenue and Arrow Highway		Recently Constructed	November 2014
San Dimas	Biofilter - Vegetated Swale	Grigolla, Raymond	0.63 Acres	627 W Allen	Tributary Area: 0.18 acres.	Recently Constructed	April 2015

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
San Dimas	Bio-skirt, Manufactured Devices (e.g., proprietary underground devices, hydrodynamic devices, etc.)		N/A	627 W Allen	1.32 cfs	Recently Constructed	April 2015
San Dimas	Infiltration (Percolation) Trench	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	3/4" 2 yr. storm, up to 25 yr. storm conveyed through perforated pipe and allowed to infiltrate in 72hr period	Recently Constructed	September 2014
San Dimas	Catch Basin Filter inserts	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(6) Catch basin filter inserts, (FloGard Plus) - location of one of six catch basins	Recently Constructed	September 2014
San Dimas	Roof drain boxes	San Dimas High - Performing Arts Center	3.04 Acres	800 West Covina Blvd	(7) Roof drain boxes with filter inserts, (FloGard Plus) - location of one of seven roof drain boxes	Recently Constructed	September 2014

Table 4-2
Planned and Recently Constructed BMPs in the WMP Area (continued)

Jurisdiction	BMP Type	Project Name	Project Size	Location	Capacity	Phase (Planned or Recently Constructed)	Completion Date
San Dimas	Double Modular EcoRainTank System	San Dimas High - Parking Lot	0.6 Acres	800 West Covina Blvd	Total volume = 27'W x 57.62'L x 2.89' H	Recently Constructed	September 2014
San Dimas	Underground Detention Trench	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy	100% peaked mitigated flow: 0.93 Acres	Recently Constructed	June 2014
San Dimas	Vegetated Swale	Proposed Warehouse/Office Building	1.874 Acres	328 W Arrow Hwy		Recently Constructed	June 2014
San Dimas	Infiltration Basin with continuous deflective separation pre treatment	Costco	22.6 Acres	520 N Lone Hill (southeast corner of Gladstone/Lone Hill)	Sized to store the 1st 0.75" runoff (0.193"/hr.). Treat sediments, nutrients, organic compounds, debris, hydrocarbons, and metals	Recently Constructed	2008
San Dimas	Infiltration Chamber	Southern California Edison - Parking Lot	5.1 Acres	South of Cienega, 800 West Cienega Avenue	3/4" 24-hr storm runoff volume (0.27 ac/ft.)	Recently Constructed	November 2014

4.2 MCMS/INSTITUTIONAL BMPS

The ESGV Group will implement provisions in Part III - Discharge Prohibitions and Part VI.D - Stormwater Management Program Minimum Control Measures (MCMs) as set forth in the Permit. Although the previous permit (Order No. 01-182) required implementation of MCMs, some of the enhancements introduced by the current Permit include:

- Additional outreach and education as part of the Public Information and Participation Program is required. For example, each Group member will be required to maintain a website with stormwater-related educational materials.
- Each jurisdiction is expected to record more information on industrial and commercial facilities within their jurisdiction as part of their Industrial/Commercial Facilities Program.
- The Permit provides more detailed information on BMP criteria for use in the Group's Planning and Land Development Program, formerly the Development Planning Program, and calls for annual reporting of implemented mitigation projects.
- An Erosion and Sediment Control Plan (ESCP), which includes elements of a Storm Water Pollution Prevention Plan (SWPPP), replaces the Local SWPPP as a required document for construction activities meeting certain criteria as a prerequisite to building/grading permit issuance.
- The Permit also requires an electronic tracking system for construction activities within their jurisdiction and mandates more aggressive inspection schedules.
- The Public Agency Activities Program remains largely unchanged with the exception of requiring an inventory of existing developments for BMP retrofitting opportunities.

A comparison between program requirements of the previous and current Permit is summarized in **Table 4-3**.

4.2.1 Customization of MCMs

The Permit allows for customizing MCMs if the effectiveness on an MCM activity can reasonably show that customization would result in equal or improved water quality effects. As an institutional preference, the City of San Dimas is proposing to align their construction site inspections with the City's building permit inspections. Inspection of construction sites one (1) acre or greater would occur bi-weekly during the wet weather season and monthly during the dry weather season. This modification will maintain adequate inspection frequencies while eliminating wet weather uncertainties. During implementation of the WMP, additional modifications may be considered as part of the adaptive management process.

Table 4-3
Comparison of Storm Water Management Program MCMs

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Public Information and Participation Program	Public Education Program - Advisory committee meeting (once per year)	x	
	"No Dumping" message on storm drain inlets (by 2/2/2004)	x	
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
	Outreach and Education	x	
	Make reporting info available to public	x	x
	Public service announcements, advertising, and media relations	x (4.B.1.c.1)	x
	Public education materials - Proper handling	x (4.B.1.c.3)	x
	Public education materials - Activity specific	x	x
	Educational activities and countywide events	x	x
	Quarterly public outreach strategy meetings (by 5/1/2002)	x	
	Constituent-specific outreach information made available to public	x	x
	Business Assistance Program	x	
	Educate and inform corporate managers about stormwater regulations	x	
	Maintain storm water websites		x
	Provide education materials to schools (50 percent of all K-12 children every two years)	x	x
	Provide principle permittee with contact information for staff responsible for storm water public educational activities (by 4/1/2002)	x	x
	Principle permittee shall develop a strategy to measure the effectiveness of in-school education programs	x	
	Principle permittee shall develop a behavioral change assessment strategy (by 5/1/2002)	x	
	Educate and involve ethnic communities and businesses (by 2/3/2003)	x (4.B.1.c.2)	x
	Reporting hotline for the public (e.g., 888-CLEAN-LA)	x	x
Industrial/Commercial Facilities Program Industrial/Commercial Facilities Program	Track critical sources – Restaurants	x	x
	Track critical sources - Automotive service facilities	x	x
	Track critical sources - RGOs	x	x
	Track critical sources - Nurseries and nursery centers		x
	Track critical sources - USEPA Phase I facilities	x	x
	Track critical sources - Other federally-mandated facilities [40 CFR 122.26(d)(2)(iv)(C)]	x	x
	Track critical sources - Other commercial/industrial facilities that Permittee determines may contribute substantial constituent load to MS4		x
	Facility information - Name of facility	x	x
	Facility information - Contact information of owner/operator	name only	x
	Facility information - Address	x	x
	Facility information - NAICS code		x
	Facility information - SIC code	x	x
	Facility information - Narrative description of the activities performed and/or principal products produced	x	x
	Facility information - Status of exposure of materials to storm water		x
	Facility information - Name of receiving water		x
	Facility information - ID whether tributary to 303(d) listed water and generates constituents for which water is impaired		x
	Facility information - NPDES/general industrial permit status	x	x
	Facility information - No Exposure Certification status		x
	Update inventory of critical sources annually	x	x
	Business Assistance Program	optional	x
	Notify inventoried industrial/commercial sites on BMP requirement		once in 5 years
	Inspect critical commercial sources (restaurants, automotive service facilities, retail gasoline outlets and automotive dealerships)	twice in 5 years	twice in 5 years
	Inspect critical industrial sources (phase 1 facilities and federally-mandated facilities)	twice in 5 years[1]	twice in 5 years[2]
	Verify No Exposure Certifications of applicable facilities		x
	Verify Waste Discharge Identification number of applicable facilities	x	x
	Source Control BMPs	x	x
	Provisions for Significant Ecological Areas (Environmentally Sensitive Areas)	x[3]	x
	Progressive enforcement of compliance with stormwater requirements	x	x
	Interagency coordination	x	x

Table 4-3
Comparison of Storm Water Management Program MCMs (continued)

Program Element	Activity	Old Permit (Order No. 01-182)	New Permit (Order No. R4-2012-0175)
Planning and Land Development Program	Peak flow control (post-development stormwater runoff rates, velocities, and duration)	x	x[4]
	Hydromodification Control Plan	in lieu of countywide peak flow control	x
	Standard Urban Stormwater Mitigation Program (SUSMP) (by 3/3/03)	x	
	Volumetric Treatment Control (SWQDv) BMPs	x	x
	Flow-based Treatment Control BMPs	x	x
	Require implementation of post-construction Planning Priority Projects as treatment controls to mitigate storm water pollution (by 3/10/2003)	x	x
	Require verification of maintenance provisions for BMPs	x	x
	California Environmental Quality Act process update to include consideration of potential stormwater quality impacts	x	
	General Plan Update to include stormwater quality and quantity management considerations and policies	x	
	Targeted Employee training of Development planning employees	x	
	Bioretention and biofiltration systems		x
	SUSMP guidance document	x	
	Annual reporting of mitigation project descriptions		x
Development Construction Program	Erosion control BMPs	x	x
	Sediment control BMPs	x	x
	Non-storm water containment on project site	x	x
	Waste containment on project site	x	x
	Require preparation of a Local SWPPP for approval of permitted sites	x	x
	Inspect construction sites on as-needed basis		x
	Inspect construction sites equal to or greater than one acre	once during wet season	once every two weeks[5], monthly
	Electronic tracking system (database and/or Geographic Information System (GIS))		x
	Required documents prior to issuance of building/grading permit	L-SWPPP	ESCP/SWPPP
	Implement technical BMP standards		x
	Progressive enforcement	x	x
	Permittee staff training	x	x
Public Agency Activities Program	Public construction activities management	x	x
	Public facility inventory		x
	Inventory of existing development for retrofitting opportunities		x
	Public facility and activity management	x	x
	Vehicle maintenance, material storage facilities, corporation yard management	x	x
	Landscape, park, and recreational facilities management	x	x
	Storm drain operation and maintenance	x	x
	Streets, roads, and parking facilities maintenance	x	x
	Parking Facilities Management	x	x
	Emergency procedures	x	x
	Alternative treatment control BMPs feasibility study	x	
	Municipal employee and contractor training		x
	Sewage system maintenance, overflow, and spill prevention	x	x
IC/ID Elimination Program	Implementation program	x	x
	MS4 Tracking (mapping) of permitted connections and illicit connections and discharges	x	x
	Procedures for conducting source investigations for Illicit Connections/Illicit Discharges (IC/IDs)	x	x
	Procedures for eliminating IC/IDs	x	x
	Procedures for public reporting of ID		x
	IC/ID response plan	x	x
	IC/IDs education and training for staff	x	x

[1] Tier 2 facilities may be inspected less frequently if they meet certain criteria
[2] Subject to change based on approved WMP strategy
[3] For environmentally sensitive areas and impaired waters
[4] Maintain pre-project runoff flow rates via hydrologic control measures
[5] Sites of threat to water quality or discharging to impaired water; frequency dependent on chance of rainfall

4.3 PROCESS FOR IDENTIFYING ADDITIONAL BMPS

As part of adaptive management, additional projects will be identified and considered for further evaluation during the WMP process. The extent of BMP implementation required to achieve WMP objectives will be determined through the CIMP monitoring and is intended to adapt to new data and information.

An evaluation of projects will begin with identification of specific parcels which are publically owned, such as parks, schools, flood control facilities, or other publicly-owned open spaces which may meet the area requirements identified in the evaluation of capture potential. A preliminary list of parks and schools has been identified, including their proximity to major storm drain infrastructure, as shown in **Figure 4-3**. If the number of publicly owned parcels is not sufficient to meet anticipated capture potential, privately owned parcels with large open spaces such as parking lots will be considered.

Based on this analysis of specific project locations, a list of projects will be generated to meet the objectives of the WMP, including the potential to capture the 85th percentile, 24-hour storm event. Analysis of the projects will include the parcel location, parcel size, current ownership, and necessary infiltration capacity. The list of projects generated as a result of this process will then be evaluated based on criteria developed by the ESGV Group, as described in the following section.

The process to identify and evaluate additional projects is illustrated schematically in **Figure 4-2** and further described in the following subsections.

Figure 4-2
Process for Identification and Evaluation of Additional Projects

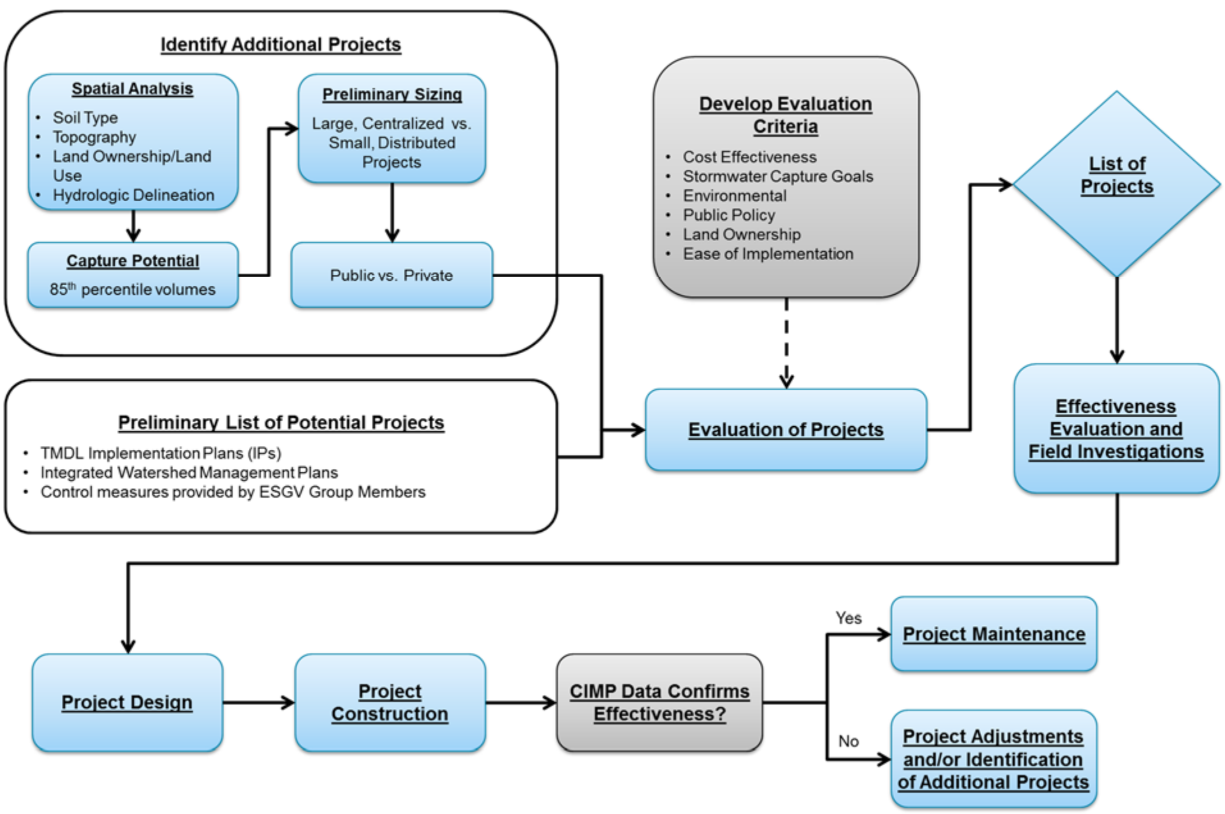
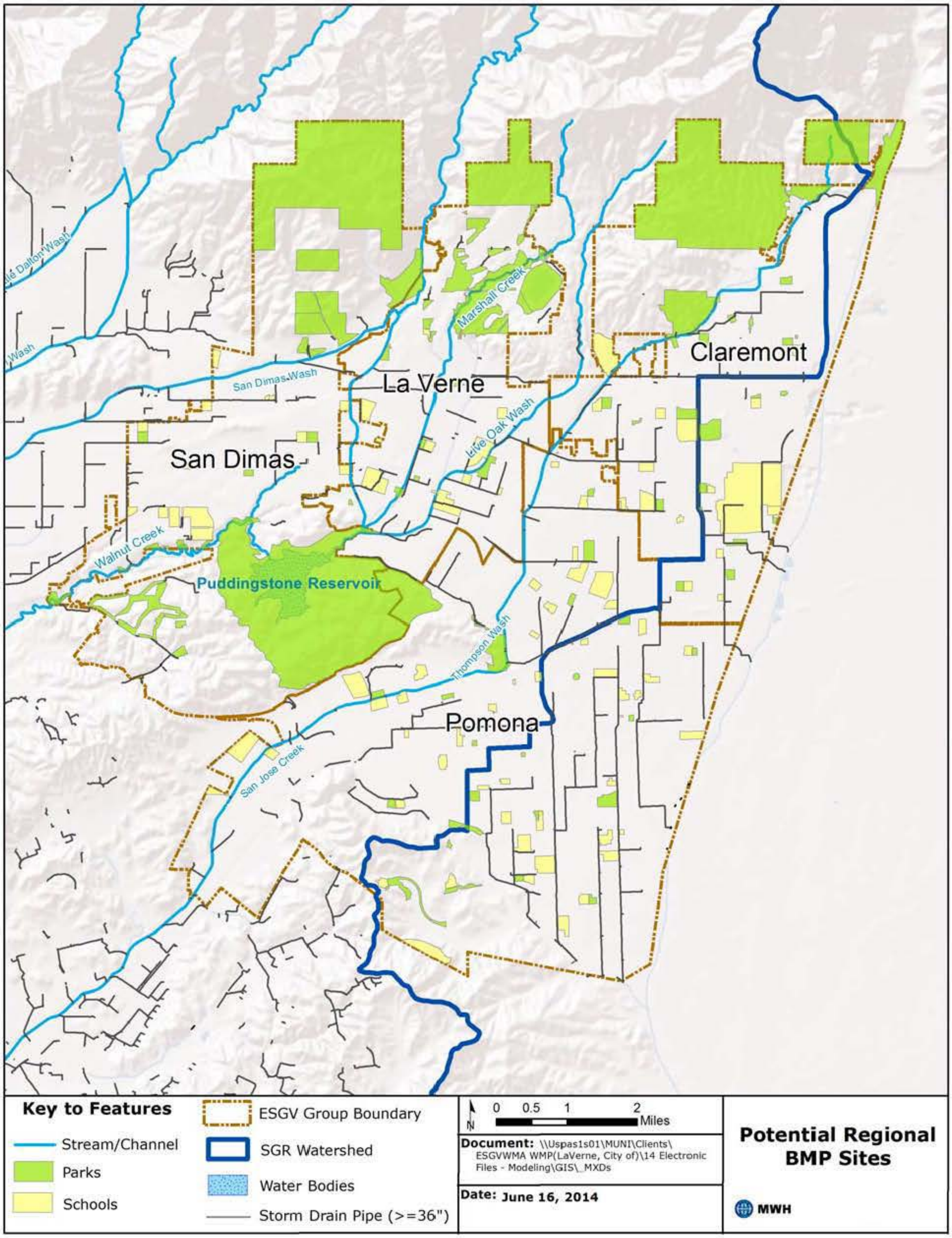


Figure 4-3
Potential Regional BMP Sites



4.3.1 Identification of Additional Projects

Additional BMPs will be identified using a detailed spatial analysis, beginning with an initial spatial analysis of fatal flaws, and culminating with an identification of potentially suitable locations.

4.3.1.1 Initial Spatial Analysis

Initially, a preliminary screening will identify locations within ESGV Group's jurisdictions that can be eliminated from consideration because they are clearly unsuitable for the siting of projects. Potential fatal flaws include adverse conditions related to:

- **Soil Type.** Surface soils such as bedrock materials, clay, or other relatively impermeable substrate will prohibit the infiltration of stormwater. Locations where these conditions exist will be considered less preferable during the initial screening.

- **Topography.** Locations with slopes greater than 25 percent will be eliminated from further consideration because of the difficulty in constructing facilities in terrain with high relief. Additionally, areas in the headwaters of the watershed will be considered less preferable because of the paucity of stormwater runoff in these areas.

- **Unsuitable Land Ownership and/or Land Use Designations.** Land ownership and/or prior designation of land use of areas within the ESGV Group's jurisdictional areas that would prohibit regional projects will be considered less preferable. Areas that are owned by the federal or state government will be considered less preferable because of the difficulty of permitting maintaining projects in these areas. Other considerations will include protected open spaces or wildernesses that are less suitable for regional projects.

- **Environmental Constraints.** Environmentally restricted areas, such as superfund sites and landfills will be deemed unsuitable during the initial screening. Areas of contaminated groundwater will need to be further evaluated to determine if recharge of stormwater causes mobilization of contaminants in the aquifer.

This initial spatial screening will result in identification of areas that may have the potential to meet the 85th percentile, 24-hour storm event capture volume requirement. These areas may be considered for further evaluation as potential Regional WMP Project locations.

4.3.1.2 Capture Potential and Preliminary Sizing

Projects are sited to capture the required volume of water at selected locations along stormwater flow paths within the jurisdictional areas. A few centralized locations at lower elevations in the watershed will require larger acreage and greater infiltration capacity than numerous distributed regional facilities located higher in the watershed. The intent of the capture potential analysis is to assess the practicality of a few centralized projects and evaluate the practical requirement for a larger number of distributed projects. Using typical infiltration rates, the size of a potential project can be evaluated if the volume of water to be captured is known. The next step in the progressive spatial analysis is to perform preliminary sizing of required facilities at key locations in the watershed. This will provide information as to the practicality of larger centralized projects and distributed projects.

4.3.2 Evaluation Criteria Development

The list of potential projects will be evaluated based on criteria developed by the ESGV Group, in order to determine the projects best suited for achieving the multi-benefit objectives of the WMP. **Table 4-4** identifies potential categories for evaluation criteria to prioritize projects and their ability to meet MS4

Permit requirements and the ESGV Group's goals. The following potential categories and considerations will be refined by the ESGV Group.

Table 4-4
Project Evaluation Criteria

Criteria Category	Considerations
Cost Effectiveness	Life Cycle Cost Capital Cost Operations and Maintenance Cost Funding Options (Grants, State Revolving Funds, other funding)
Stormwater Capture Goals	Capacity or Volume of Water Captured Water Quality Groundwater Recharge/Infiltration Capacity Geographical Location
Environmental	Environmental Constraints Reduced Energy Consumption Consumption of Other Resources Multi-use benefits Impact on habitat or species
Public Policy Institutional Issues	Political Constraints Education/Outreach Political Support Partnerships
Land Ownership	Public vs. Private Land Acquisition Impediments
Ease of Implementation	Permitting Schedules (short term vs. long term) Constructability Site Accessibility

4.3.3 Ranking Potential Projects

The list of potential projects will be ranked in accordance with the evaluation criteria described above and refined. Initially, ranking by category will be relatively simple, using qualitative weighting descriptions such as "favorable", "moderately favorable", and "not favorable". More quantitative criteria and weighting factors will be developed if necessary and if more quantitative data becomes available. Projects will be further evaluated through effectiveness evaluations and field investigations as necessary.

5 Reasonable Assurance Analysis and Watershed Control Measures

This section describes the RAA and presents the capacities of watershed control measures (WCMs) required to address the water quality priorities for the ESGV WMP. In this section, the terms WCMs and BMPs are used interchangeably. While the Permit prescribes the RAA as a quantitative demonstration that WCMs will be effective, the RAA for the ESGV WMP was also designed to identify and prioritize control measures to be implemented by the Group. In other words, the RAA for the ESGVWMP also supported the selection of WCMs. Furthermore, the RAA was used to schedule/sequence the implementation of BMPs to assure attainment of the interim WQBELs and RWLs.

For this WMP, the RAA process led to a decision by the Group to base the WMP around networks of BMPs that are able to collectively retain the volume associated with the 85th percentile storm, as depicted in **Figure 5-1** and described below. By using design storm retention as the basis for the RAA, it comprehensively addresses all Water Quality Priorities, as follows:

- Retention of the design storm addresses all Category 1, 2 and 3 pollutants
- Retention of the design storm addresses any additional pollutants that may arise as Water Quality Priorities during EWMP implementation
- Retention of the design storm addresses both wet and dry weather issues
- The schedule for implementing BMPs to retain the design storm (Section 5.3) is the schedule for addressing all current and future Water Quality Priorities, including Puddingstone Reservoir.

5.1 REASONABLE ASSURANCE ANALYSIS

A key element of each WMP is the RAA, which is used to demonstrate “that the activities and control measures…will achieve applicable WQBELs and/or RWLs with compliance deadlines during the Permit term”. The WMP has closely followed the RAA Guidelines issued by the Regional Board on March 25, 2014 (Los Angeles Regional Water Quality Control Board, 2014). The RAA is a predictive quantitative process that includes the following components:

Step 1: Incorporates Water Quality Priorities and identifies numeric goals to address them: Numeric Goals, which represent RAA drivers, include TMDL targets, WQBELs, RWLs and the 85th percentile design storm volume. The estimated baseline/existing loading or design storm volumes provides a reference point of comparison for measuring BMP performance and cost-effectiveness (i.e. the difference between the current loading or design storm volumes and predicted loading or volumes after BMPs are implemented, and the cost of those BMPs).

Step 2: Identifies opportunities for BMP implementation in the WMP area: the RAA inherently includes an exploratory element for evaluating BMP opportunities. The opportunities of most interest are right-of-way (ROW) and public parcels, as land acquisition can be prohibitively expensive.

Step 3: Evaluates effectiveness of potential BMPs on receiving water quality, jurisdictional loading and/or design storm runoff volume: this WMP will serve as a "recipe for compliance" for each jurisdiction. As such, assessment of the effectiveness of BMP scenarios requires consideration of averaging/simulation periods and determination of points where load or volume reductions will be assessed. In general, load reductions are assessed in-stream while design storm volume reductions are assessed at end-of-pipe.

Step 4: Identifies the combination of BMPs expected to attain Numeric Goals: the RAA is an iterative process that evaluates different combinations of BMPs and quantify their effectiveness. It is through the iterative modeling process that certain practices have been prioritized for inclusion in the WMP based on cost and feasibility.

Step 5: Supports scheduling to implement the BMPs over a timeline that addresses milestones cost-effectively: the pace at which BMPs are implemented is dictated by applicable TMDL and WMP milestones. Areas where BMP implementation offers the greatest immediate benefit for the lowest cost have been highlighted and recommended for the early implementation phases.

Step 6: Supports the future adaptive management process to incorporate new data and experience gained during BMP implementation: the BMP capacities identified in this WMP will be achieved over decades of implementation, and the adaptive management process will take place over two-year cycles to incorporate new data and regulatory modifications. Future data/outcomes that could affect the level of BMP implementation include new monitoring data collected through implementation of the CIMP, experience gained from BMP implementation, and changes to the water quality standards (i.e., beneficial uses or WQOs).

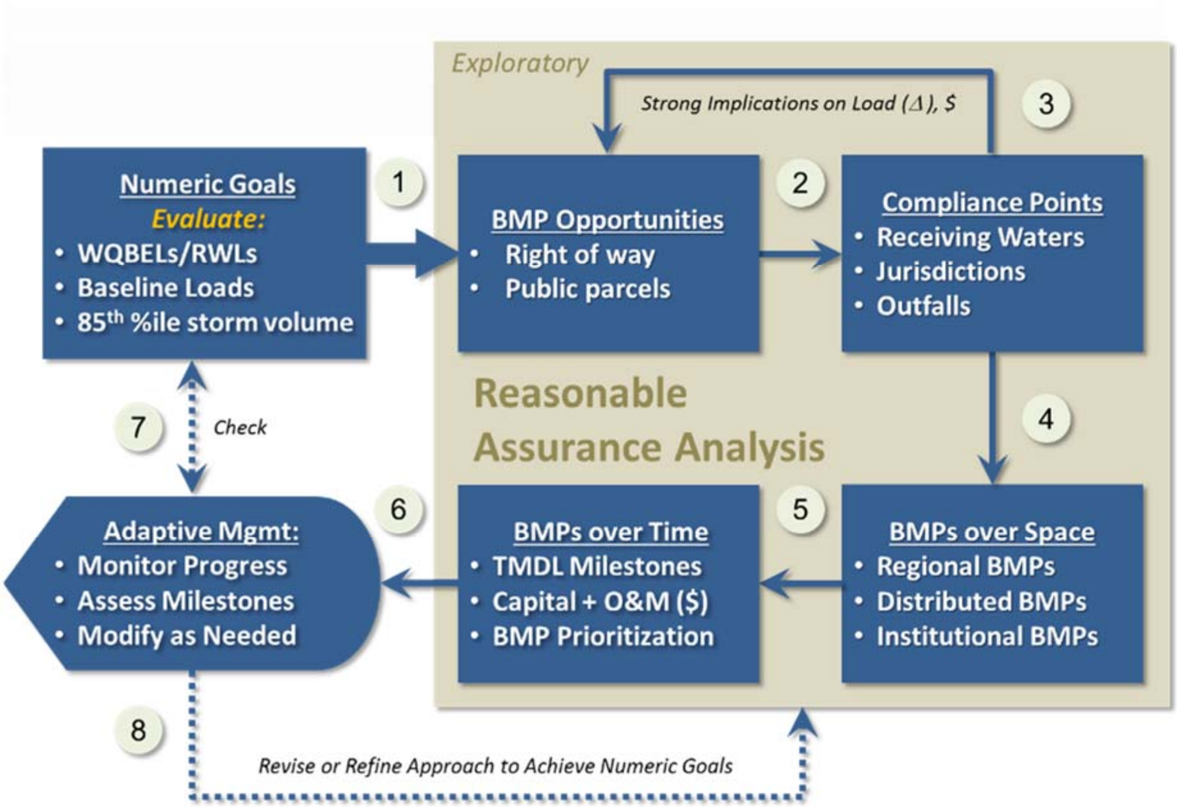
The RAA effort presented herein has evolved over the course of WMP development, and has been refined as new insights have come to light. The RAA will certainly be revisited and further refined with future adaptive management cycles as the WMP is implemented and performance validated.

Determination of compliance with this WMP will be on a subwatershed-by-subwatershed basis, based on the BMP capacity implemented by each jurisdiction. If the design storm volume is retained prior to discharge from a subwatershed to receiving waters, then that subwatershed area is in compliance with RWLs and WQBELs of the Permit. The WMP includes an initial scenario of BMPs to achieve the design storm retention goals across the planning area, but the cities are provided flexibility to modify the BMPs during adaptive management if either [1] the preferences for BMPs change as lessons are learned during WMP implementation or [2] water quality monitoring data, collected as part of the CIMP, indicate that less extensive BMP implementation is needed to achieve Permit limitations.

In order to establish an initial scenario for BMP implementation to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted, including a capacity analysis for green streets in the Right-of-Way (ROW), and BMPs on public and private parcels. Several different types of distributed BMPs are incorporated into the WMP including green streets, low impact development (LID) due to new and redevelopment, and downspout disconnection programs. Excess volume that is unable to be captured by distributed BMPs (due to overflow) may be retained with regional BMPs. During WMP implementation, ROW BMPs other than green streets may be selected, including dry wells. As part of the adaptive management process, the capacity of non-

ROW BMPs may be shifted from regional BMPs to LID on parcels or incentive programs that reduce runoff from residential and commercial properties.

Figure 5-1
Conceptual Diagram of RAA Components



5.1.1 Description of RAA Modeling System

The WMMS was used to support this RAA. WMMS is specified in the Permit as a potential tool to conduct the RAA. LACFCD, through a joint effort with United States Environmental Protection Agency (USEPA), developed WMMS specifically to support informed decisions associated with managing stormwater. The ultimate goal of WMMS is to identify cost-effective water quality improvement projects through an integrated, watershed-based approach. The WMMS is a modeling system that incorporates three tools: (1) the watershed model for prediction of long-term hydrology and pollutant loading (Loading Simulation Program in C++ (LSPC)), (2) a BMP model (System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN)), and (3) a BMP optimization tool to support regional, cost-effective planning efforts (Nonlinearity-Interval Mapping Scheme (NIMS)). The WMMS encompasses the County's coastal watersheds of approximately 3,100 square miles, representing 2,566 subwatersheds (**Figure 5-2**).

For the ESGV Group, the 67 subwatersheds in the WMP area that are represented by WMMS were spatially refined by intersecting with jurisdictional/city boundaries of the Group, resulting in 98 unique subwatershed-city areas. Out of these 98 areas, 78 were hydrologically connected to at least one "RAA assessment point" used to evaluate the waterbodies of concern for this analysis.

Figure 5-3 shows the model spatial domain for the WMP with the jurisdictional and hydrological boundaries associated with the four RAA assessment points. The RAA assessment points are described in more detail below.

WMMS is available for public download from LACFCD. The version of WMMS used for the WMP has been enhanced/modified in several ways, consisting of:

- Updates to meteorological records to represent the last 10 years and to allow for simulation of the design storm;
- Calibration adjustments to incorporate the most recent 10 years of water quality data collected at the nearby San Gabriel River mass emission station;
- Enhancements to LSPC to allow for simulation of non-structural BMPs;
- Enhancements to SUSTAIN to allow for representation of an expanded/modified BMP network;
- Application of a second-tier of BMP optimization using SUSTAIN, which replaces the NIMS component of WMMS.
- Optimization of BMP effectiveness for removal of bacteria pollutants (rather than metals only); and
- Updates to GIS layers, as available.

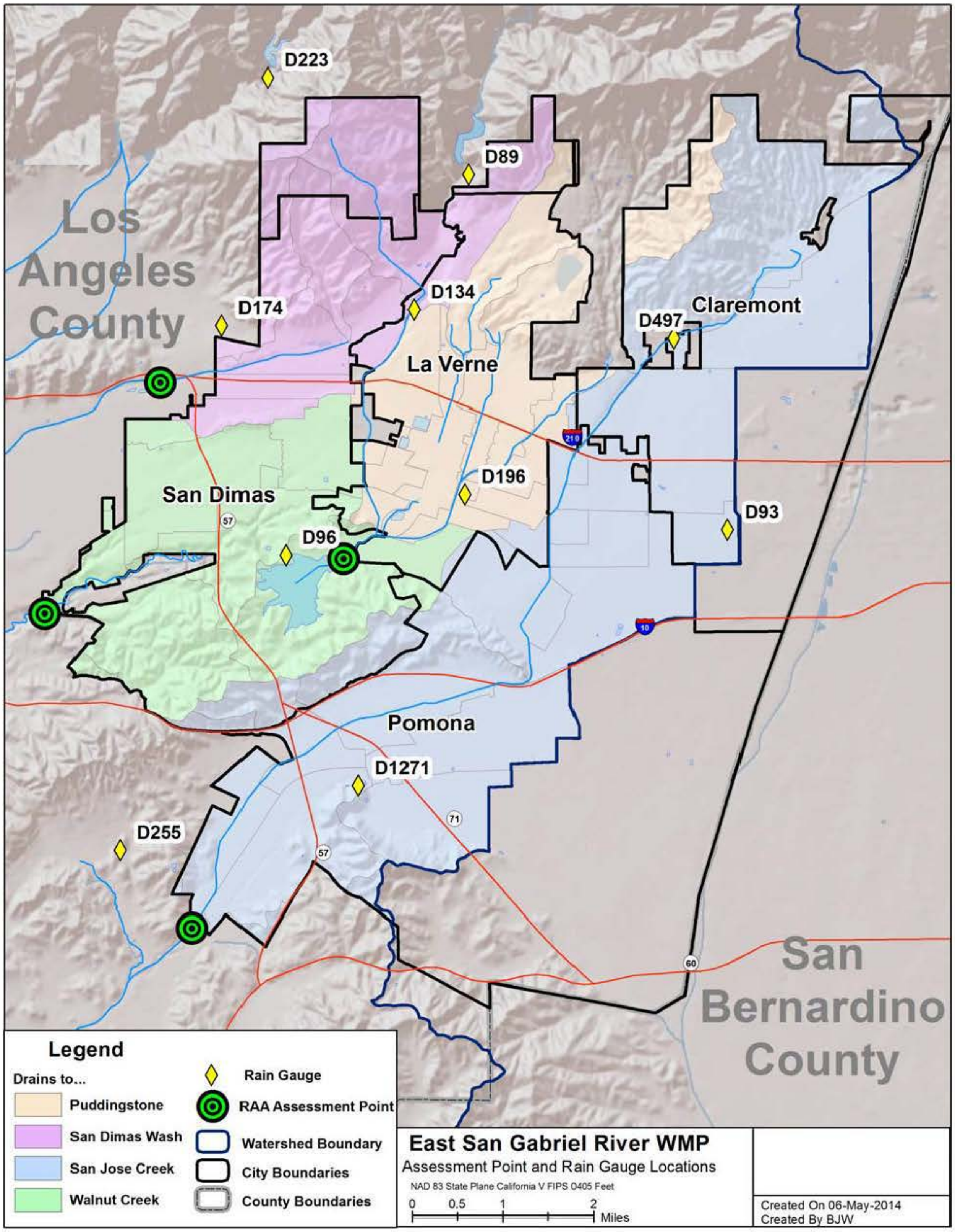
5.1.1.1 Overview of Watershed Model - LSPC

The watershed model included within WMMS is the LSPC (Tetra Tech and USEPA 2002; USEPA 2003; Shen et al. 2004). LSPC is a watershed modeling system for simulating watershed hydrology, erosion, and water quality processes, as well as in-stream transport processes. LSPC also integrates a geographic information system (GIS), comprehensive data storage and management capabilities, and a data analysis/post-processing system into a convenient PC-based Windows environment. The algorithms of LSPC are identical to a subset of those in the Hydrologic Simulation Program–FORTRAN model with selected additions, such as algorithms to dynamically address land use change over time. Another advantage of LSPC is that there is no inherent limit to the size and resolution of the model than can be developed, making it an attractive option for modeling the Los Angeles region watersheds. USEPA’s Office of Research and Development first made LSPC available as a component of USEPA’s National TMDL Toolbox (http://www.epa.gov/athens/wwqtsc/index.html). LSPC has been further enhanced with expanded capabilities since its original public release.

The WMMS development effort culminated in a comprehensive watershed model of the entire Los Angeles County area that includes the unique hydrology and hydraulics of the system and characterization of water quality loading, fate, and transport for all the key TMDL constituents (Tetra Tech 2010a, 2010b). Since the original development of the WMMS LSPC model, Los Angeles County personnel have independently updated the model with meteorological data through 2012, and refined the physical representation of the spreading grounds with higher resolution information.

Figure 5-2
WMMS Model Domain, Land Uses, and Slopes by Subwatershed

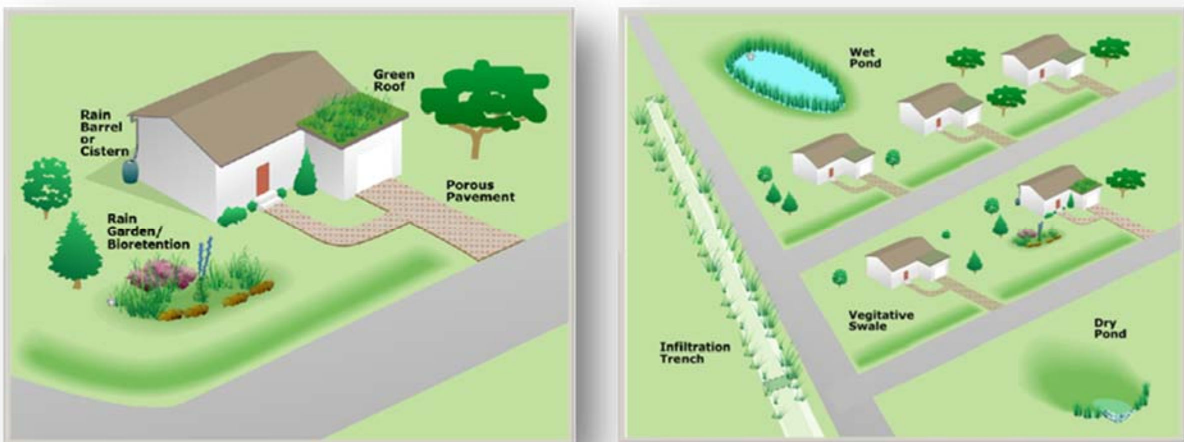
Figure 5-3
ESGV WMP Area Spatial Domain as Represented in WMMS



5.1.1.2 Overview of Small-Scale BMP Model – SUSTAIN

SUSTAIN was developed by USEPA to support practitioners in developing cost-effective management plans for municipal storm water programs and evaluating and selecting BMPs to achieve water resource goals (USEPA, 2009). It was specifically developed as a decision-support system for selection and placement of BMPs at strategic locations in urban watersheds. It includes a process-based continuous simulation BMP module for representing flow and pollutant transport routing through various types of structural BMPs. Users are given the option to select from various algorithms for certain processes (e.g., flow routing, infiltration, etc.) depending on available data, consistency with coupled modeling assumptions, and the level of detail required. **Figure 5-4** shows images from the SUSTAIN model user interface and documentation depicting some of the available BMP simulation options in a watershed context.

Figure 5-4
SUSTAIN Model Interface Illustrating Some Available BMPs in Watershed Settings



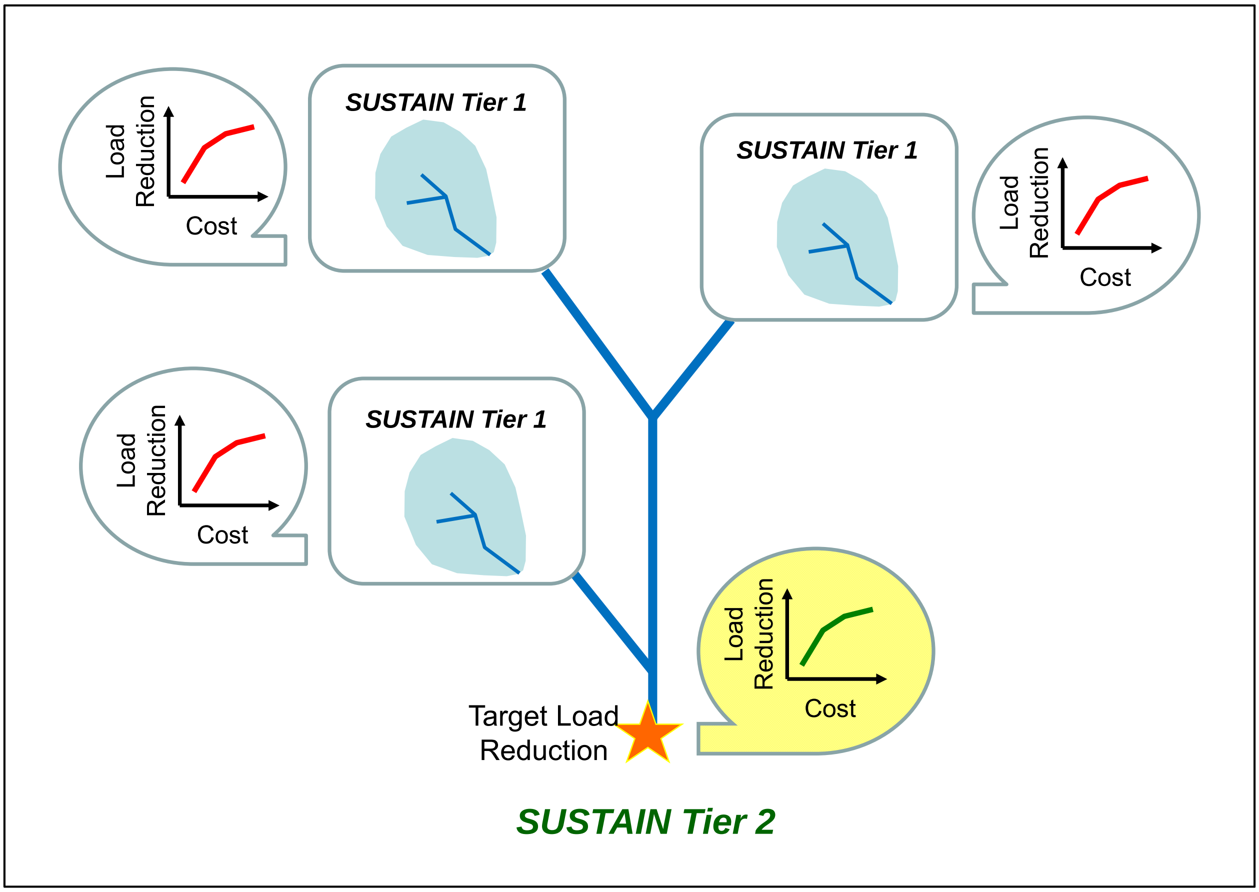
SUSTAIN extends the capabilities and functionality of traditionally available models by providing integrated analysis of water quantity, quality, and cost factors. The SUSTAIN model in WMMS includes a cost database comprised of typical BMP component cost data from a number of published sources including BMPs constructed and maintained in Los Angeles County. SUSTAIN considers certain BMP properties as "decision variables," meaning that they are permitted to change within a given range during model simulation to support BMP selection and placement optimization. As BMP size changes, so do cost and performance. SUSTAIN runs iteratively to generate a cost-effectiveness curve comprised of optimized BMP combinations within the modeled study area (e.g., the model evaluates the optimal width and depth of certain BMPs to determine the most cost-effective configurations for planning purposes).

5.1.1.3 Overview of Large-Scale BMP Model

WMMS was specifically designed to dynamically evaluate effectiveness of BMPs implemented in subwatersheds for meeting downstream RWLs while maximizing cost-benefit. The structural BMP strategies included in WMMS primarily focus on (1) distributed green infrastructure BMPs and (2) regional BMPs. With the number of alternative combinations of BMPs possible in a watershed, the ability to evaluate and compare the benefits and costs of each scenario (representing a combination of multiple BMPs) is highly desirable. WMMS includes a sophisticated optimization routine that does this in the context of the large-scale routing network using an algorithm named NIMS (Zou et al. 2010).

However, given the relatively small spatial scale of the WMP area, NIMS was not applied for this study. Instead, a two-tiered approach was applied using the NSGA-II solution technique available in SUSTAIN (**Figure 5-5**). For Tier 1, treatment capacities were optimized for each contributing segment, which resulted in unique cost-effectiveness curves for each segment based on available opportunities therein. For Tier 2, the search space was composed of Tier 1 solutions, thereby streamlining the search process. The resulting Tier 2 curve represents the optimal large scale solution because it is comprised of optimized Tier 1 solutions. This approach is especially useful for prioritizing areas for management for scheduling implementation milestones.

Figure 5-5
Conceptual Illustration of the Two-Tiered Optimization Approach



5.1.2 Model Calibration

The LSPC watershed model within WMMS was originally calibrated for hydrology using a regional approach relying on USGS observed daily streamflow datasets through Water Year (WY) 2006 (LACDPW 2010a). The calibration period for the original WMMS LSPC model began in 1996 and ended in 2006. For the RAA, an analysis was performed to evaluate performance of the LSPC model as it relates to the ESGV watershed to understand and benchmark its applicability for use as a baseline condition. The evaluation of monitoring data was extended beyond the original WMMS-LSPC calibration to include the period from 10/1/2001 through 9/30/2011.

For the San Gabriel River, hydrology was re-assessed at the Whittier Narrows Dam on the San Gabriel River (USGS 11087020) monitoring location using available data from WYs 2001-2011. The USGS gage was selected for continuity with the development and calibration of the original WMMS LSPC modeling system. At this location the upstream tributary area is 450 square miles (LACDPW 2013). Hydrograph summaries and flow regime analysis of the monitoring datasets from the San Gabriel River are presented in **Figure 5-6** to **Figure 5-10**.

To demonstrate the ability to predict the effect of watershed processes and management actions, model calibration and validation are necessary and critical steps in any model application. Acceptable model calibration criteria for benchmarking an RAA were developed by the Regional Board and are listed below in **Table 5-1** (LARWQCB 2014). The objectives of establishing model assessment criteria are to ensure the calibrated model reflects all the model conditions and properly utilizes the available modeling parameters, thus yielding meaningful results. The lower bound of "Fair" level of agreement listed in **Table 5-1** is considered a target tolerance for the model calibration process.

Table 5-1
Model assessment criteria from the RAA Guidelines

Constituent Group	Percent Difference Between Modeled and Observed		
	Very Good	Good	Fair
Hydrology / Flow	0 – 10	>10 – 15	>15 – 25
Sediment	0 – 20	>20 – 30	>30 – 40
Water Quality	0 – 15	>15 – 25	>25 – 35
Pesticides / Toxics	0 – 20	>20 – 30	>30 – 40

Table 5-2 presents the hydrology calibration assessment for the San Gabriel River gage. Nash-Sutcliffle efficiency is a correlation coefficient commonly used in hydrological modeling to measure how well a model predicts temporal variation. A value of 1.0 means a perfect match between modeled and observed. A value of 0 means that the computed mean of observed data is as good a predictor as the model. A negative value means that the data-mean is a better predictor than the model. Because the Regional Board guidance only required annual average flow volume metric, evaluating Nash-Sutcliffe helped to demonstrate that the model also performed well at predicting *intra-annual* flow variablilty. Hydrograph summaries and flow regime analysis of the monitoring datasets from the San Gabriel River are presented in **Figure 5-6** to **Figure 5-10**.

Table 5-2
Summary of model hydrology calibration performance for the San Gabriel River

Water Quality Parameter	Model Period	Hydrology Parameter	Modeled vs. Observed Volume (% Error)	Regional Board Guidance Assessment
In-stream flow at SAN GABRIEL R AB WHITTIER NARROW DAM CA (USGS 11087020)	10/1/2001 – 9/30/2011	Flow Volume	-3.31	Very Good
		Nash-Sutcliffe	0.64	n/a

Figure 5-6
Monthly Hydrograph for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

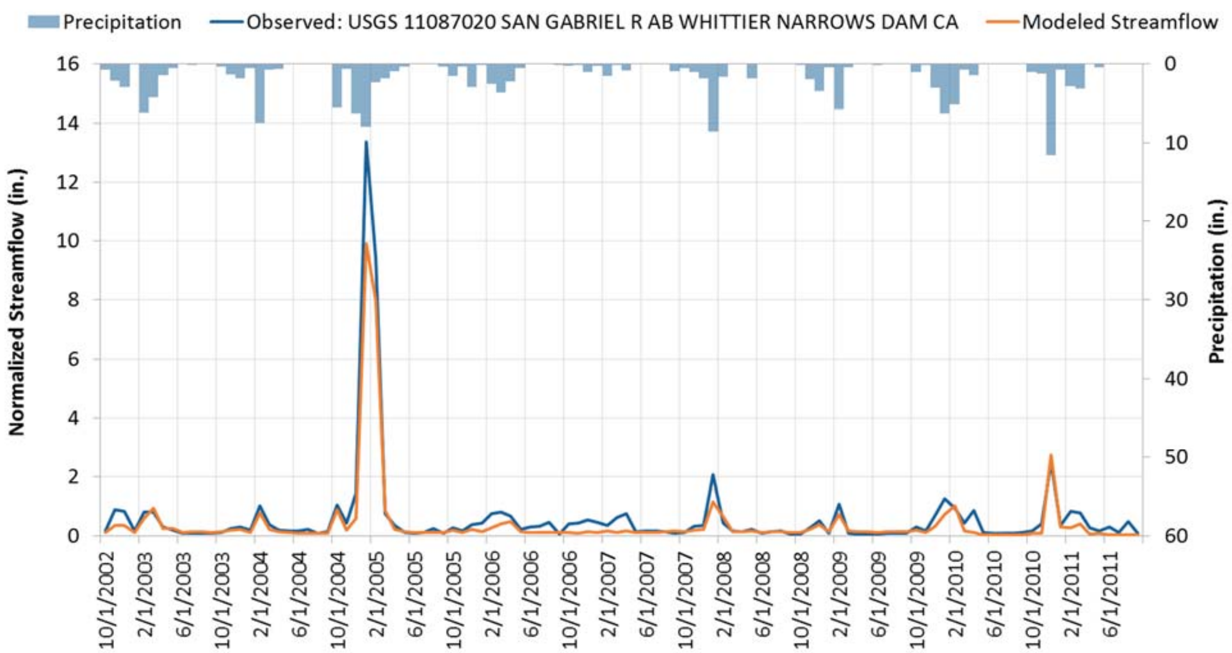


Figure 5-7
Aggregated Monthly Hydrograph for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

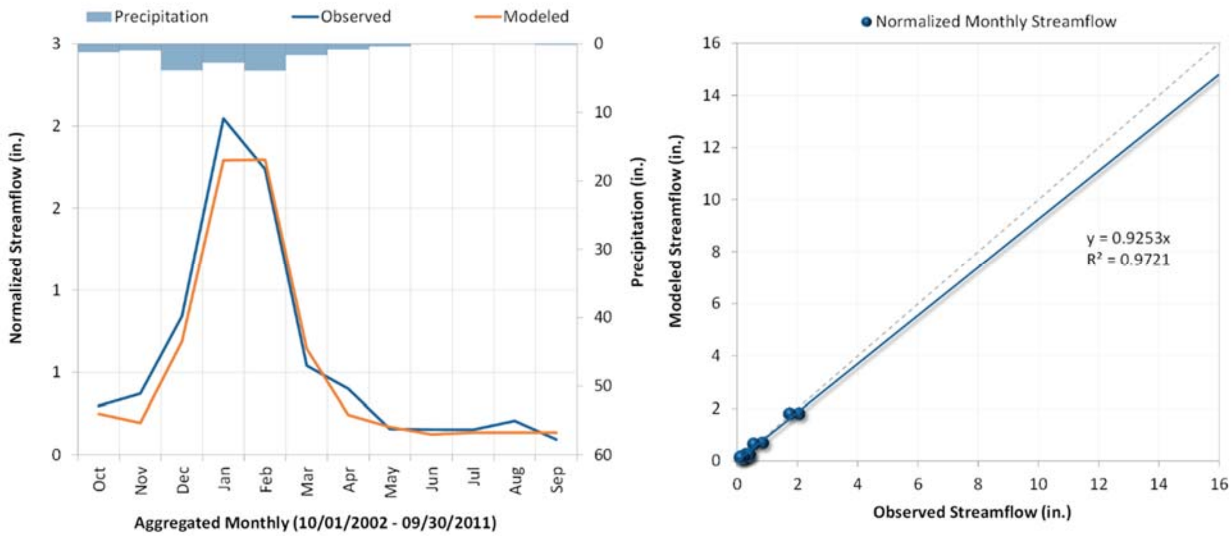


Figure 5-8
Mean daily flow for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

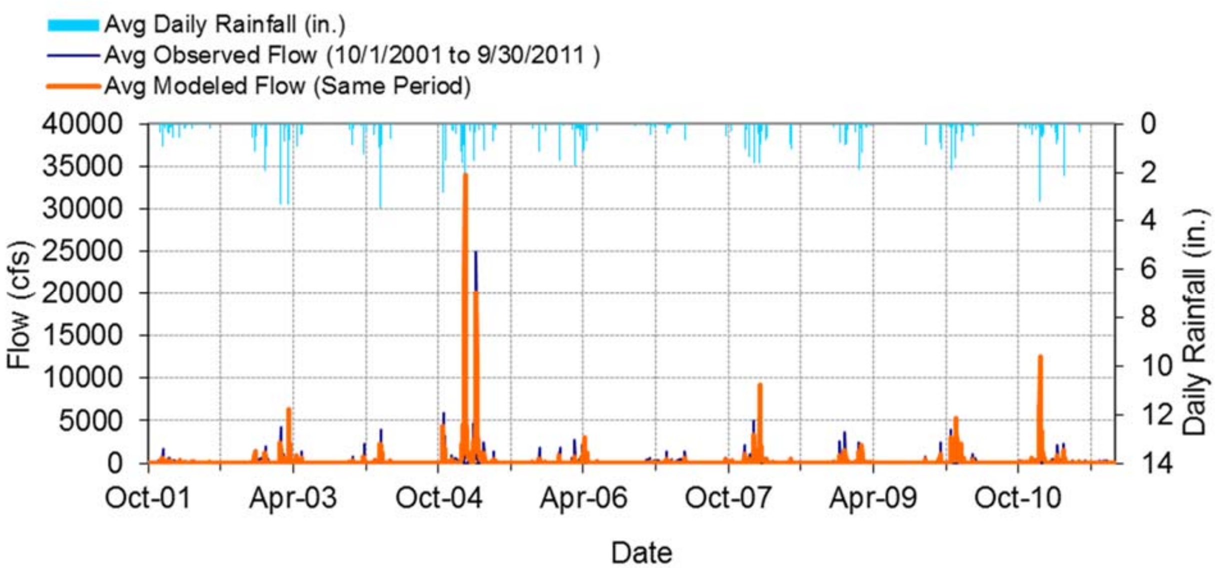


Figure 5-9
Daily Flow Exceedance for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)

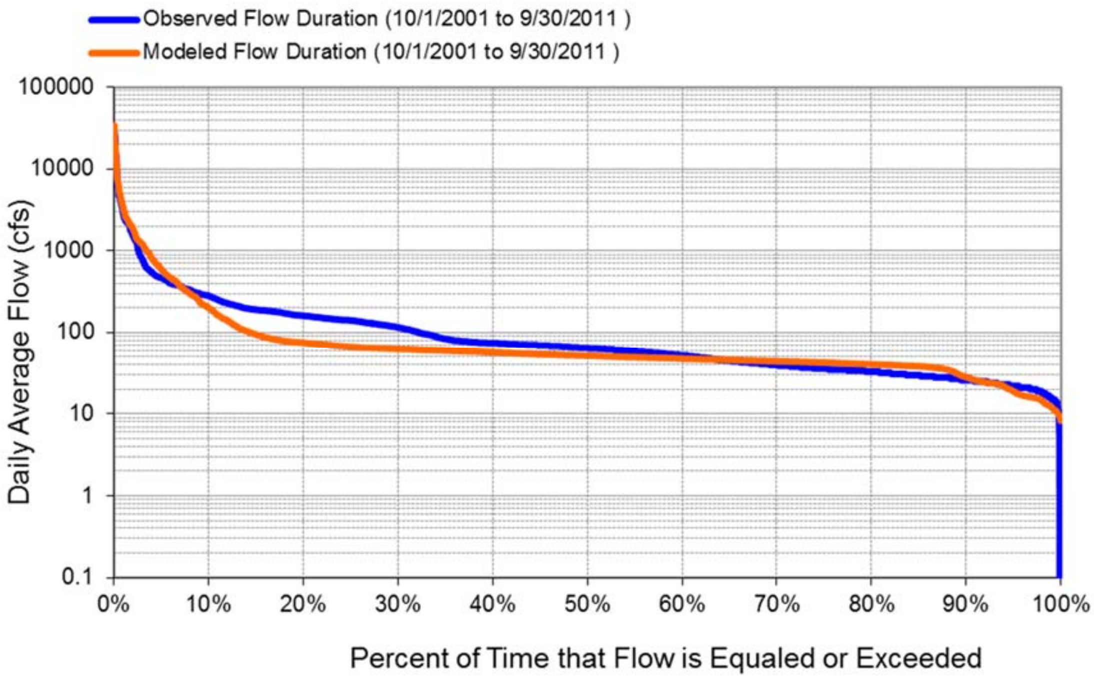
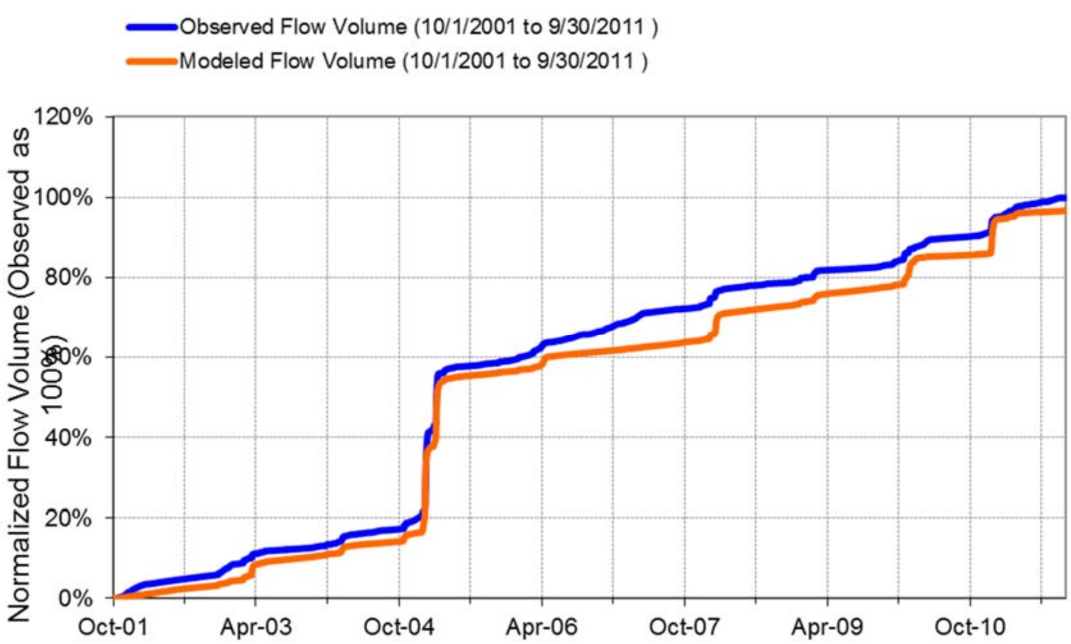


Figure 5-10
Flow Accumulation for USGS 11087020 SAN GABRIEL R AB WHITTIER NARROWS DAM CA (10/1/2002 – 9/30/2011)



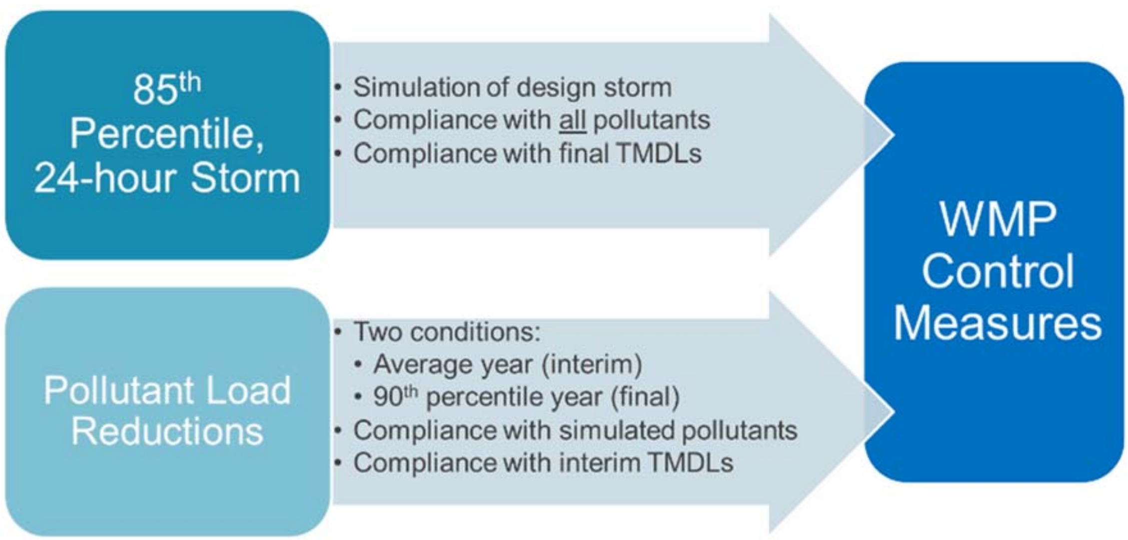
5.1.3 Water Quality Priorities and Compliance Pathways

The water quality priorities are the primary driver of the WMP and its BMPs. As shown in **Figure 5-11**, the Permit provides two pathways of numeric goals for addressing water quality priorities:

- Volume-based: Retain the standard runoff volume from the 85th percentile, 24-hour storm
- Load-based: Achieve the necessary pollutant load reductions to attain RWLs and/or WQBELs

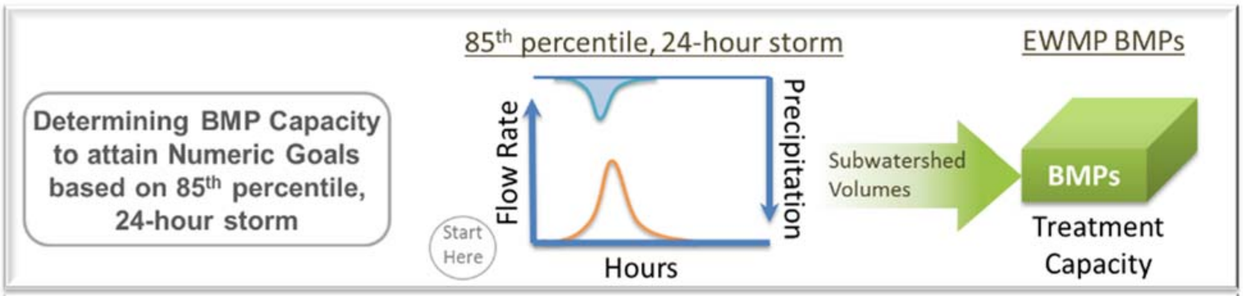
Both types of numeric goals were evaluated as part of this RAA to assess potential management implications associated with each pathway. It was decided by the Group that in the case that the level of BMP implementation effort for the numeric goal based on the 85th percentile storm is similar to the pollutant-based numeric goal , the volume-based goal would be selected because it offers increased compliance coverage (applies to all final TMDL limits).

Figure 5-11
Two Types of Numeric Goals and WMP Compliance Paths



The process for determining the necessary cumulative BMP capacity for both distributed and regional BMPs in each segment in the WMP area depends on the type of numeric goal being addressed. For the volume-based (85th percentile storm) approach, the necessary BMP capacity was determined through a design storm analysis, as illustrated in **Figure 5-12** and described in more detail below.

Figure 5-12
Illustration of Process for Determining Required BMP Capacities for the WMP using Volume-Based Numeric Goals through Simulation of the Design Storm



5.1.4 Determination of Wet Weather Critical Conditions for the RAA

This section describes the selection of the design storm as the critical condition for the RAA and WMP.

5.1.4.1 Selection of Design Storm as the Critical Condition and WMP Compliance Path

An initial step in the WMP RAA was a comparison of the volume reductions required by the load-based and volume-based numeric goals, presented in **Appendix A (section A-5)**. The design storm pathway was selected as the critical condition and used to determine BMP capacities for WMP implementation.

5.1.4.2 Rainfall-Runoff Analysis for the 85th Percentile Design Storm

The volume associated with the 85th percentile, 24-hour storm varies by subwatershed. Each of the 67 subwatersheds (and corresponding 98 city-subwatershed areas) in the WMP area has a unique 85th percentile runoff volume, due to varying rainfall amounts and land characteristics (i.e. imperviousness, soils, slope, etc.). Shown in **Figure 5-13** are the rainfall depths associated with the 85th percentile, 24-hour storm for the County and ESGVWMA using rolling 24-hour periods between October 1, 1996 and September 30, 2011.

The 85th percentile rainfall values range between 0.84 and 1.09 inches within the WMP area, as summarized in **Figure 5-14**. At each location the storm distribution shown in **Figure 5-15** was used to temporally distribute the 24-hour rainfall volumes.

Figure 5-13
Rainfall Depths Associated with the 85th Percentile, 24-hour Storm

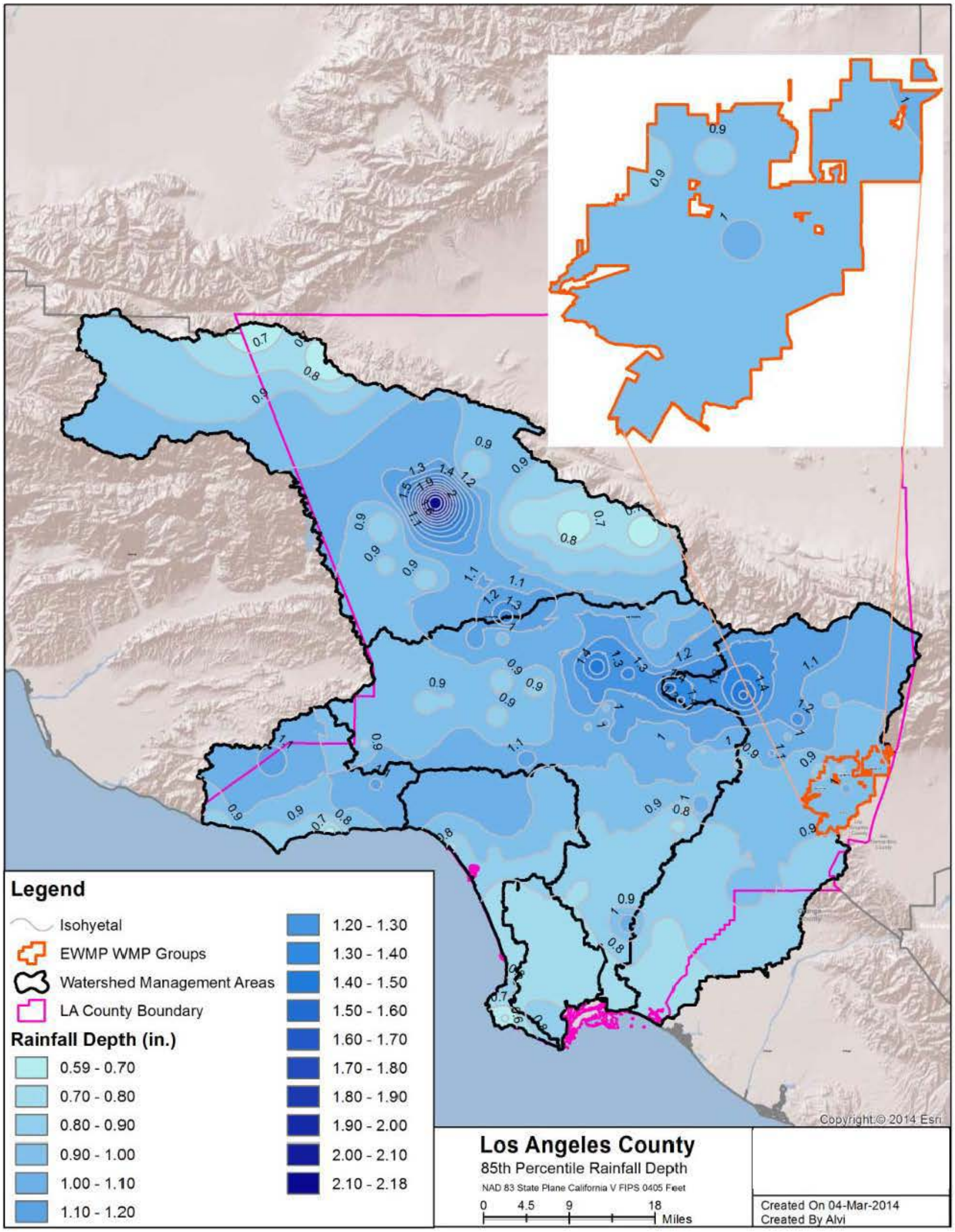


Figure 5-14
Areal Distribution Summary of 85th Percentile Rainfall in the ESGV Group Area

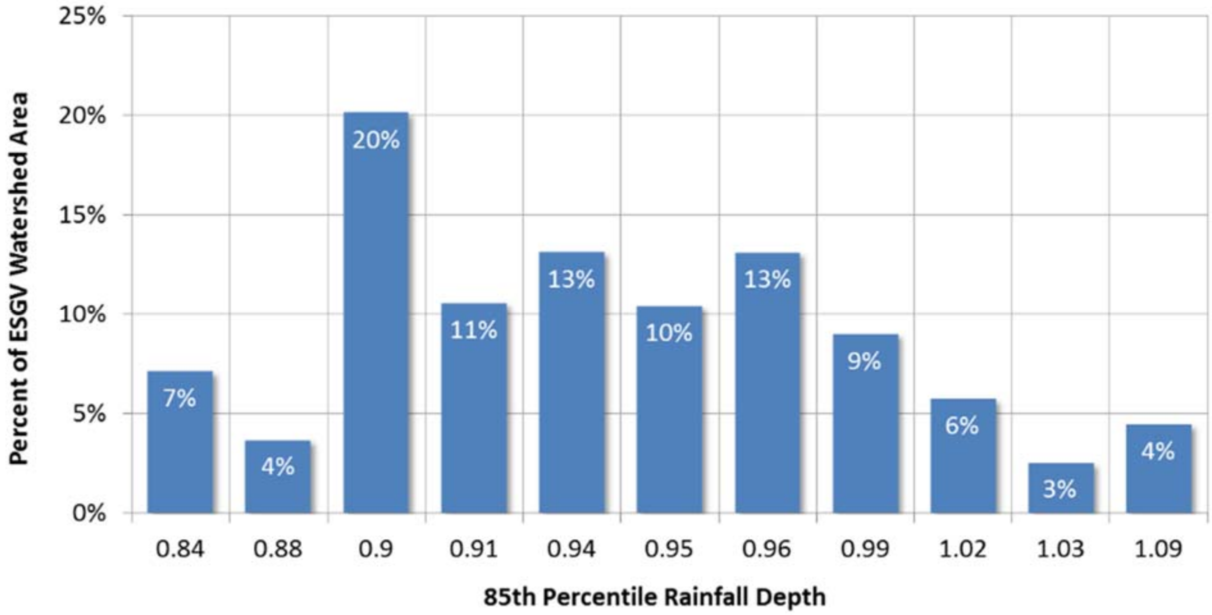
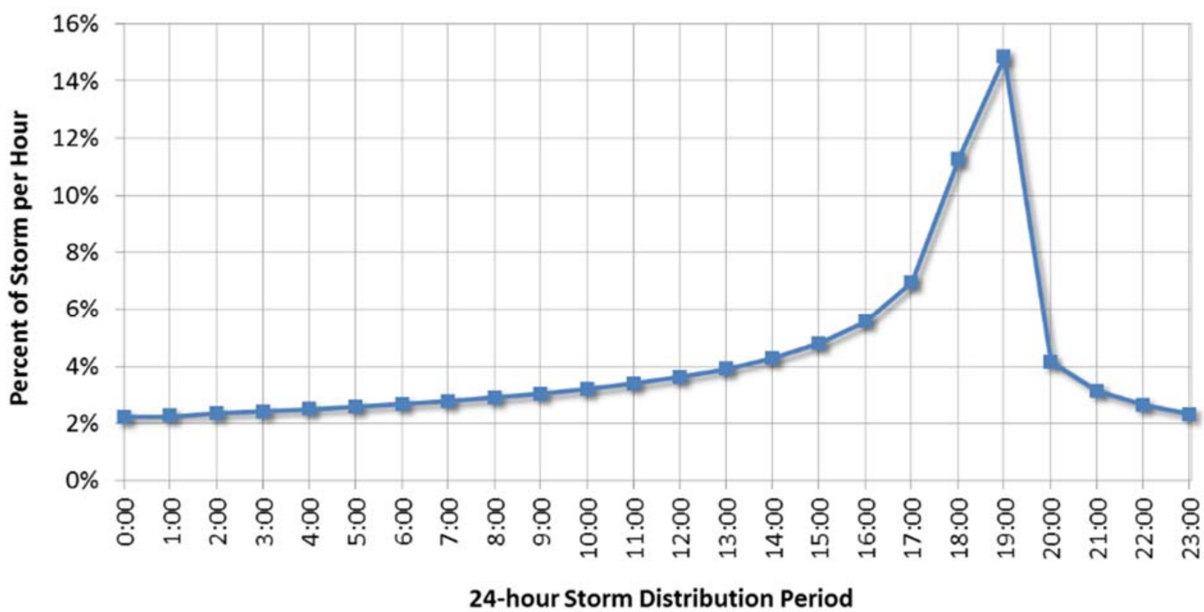


Figure 5-15
Temporal Distribution for 85th Percentile 24-hour Storm



Assuming saturated initial conditions and regionally-derived infiltration rates, the 85th percentile rainfall depths amounts were used as boundary conditions in the LSPC watershed model, to predict the associated runoff volumes for each of the 67 subwatersheds in the WMP area. Those runoff volumes represent the volumes that would need to be retained in order to attain the numeric goals associated with the 85th percentile, 24-hour storm.

Figure 5-16 shows area-based runoff exceedance associated with 85th percentile rainfall in the East San Gabriel Valley (ESGV) watershed (the amount of rainfall that is ultimately discharged from each subwatershed during the design storm). About 50 percent of the ESGV subwatershed areas experiences 0.2 inches or more of runoff under the 85th percentile, 24-hour storm. About 10 percent of the area experiences about 0.5 inches or more of runoff. **Figure 5-17** and **Table 5-3** summarize the treatment capacities required to retain the 85th percentile, 24-hour rainfall by assessment point and jurisdiction.

In Section 5.2, these volumes are (1) separated by subwatershed and jurisdiction [for a total of 90 city-subwatershed areas], (2) separated between MS4 and non-MS4 sources, and (3) used to determine the capacities of BMPs needed to retain the design storm. The required MS4 treatment capacity equals the design storm volume minus the volume of non-MS4 sources (i.e. CALTRANS and industrial permittees).

Figure 5-16
Area-Based Runoff Associated with 85th Percentile Runoff in the ESGV Watershed

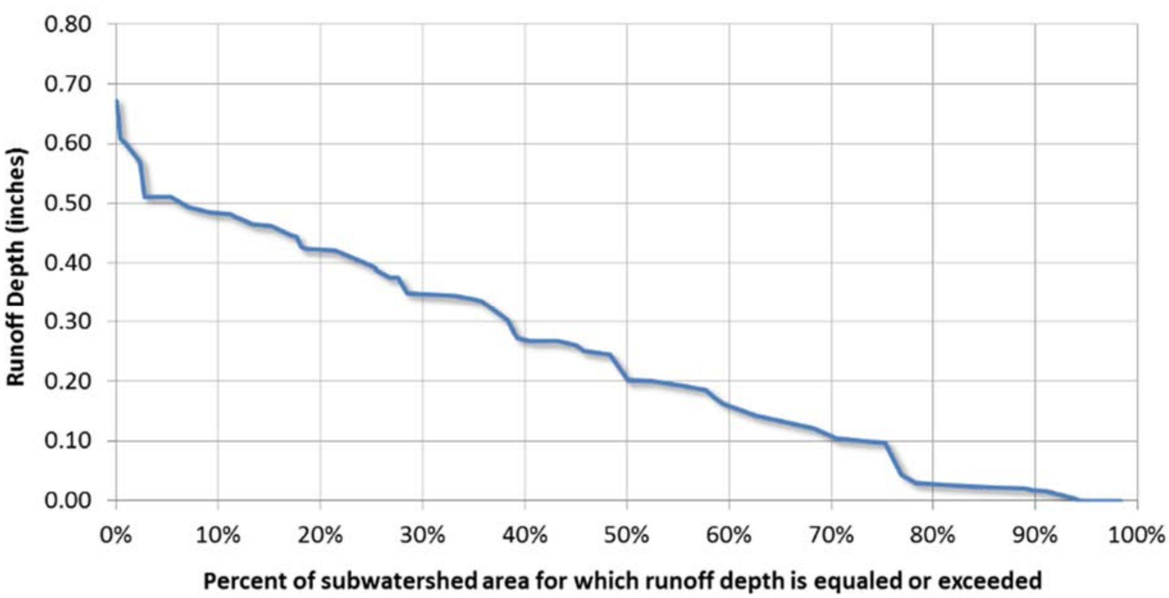


Figure 5-17
Treatment Capacity Required to Retain Runoff Associated with the 85th Percentile, 24-hour Storm (by assessment point and jurisdiction)

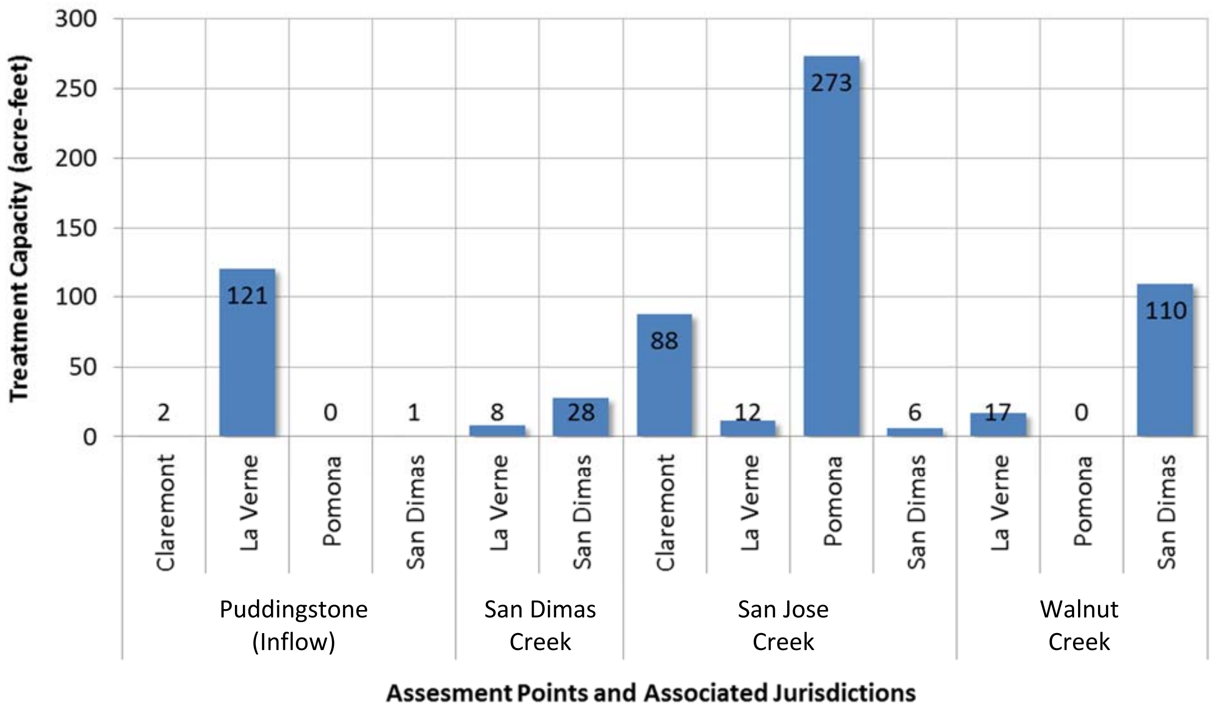


Table 5-3
Design Storm Runoff Volume per Jurisdiction

Jurisdiction	Required MS4 Treatment Capacity, acre-ft
Claremont	85.2
La Verne	126.9
Pomona	204.9
San Dimas	126.9
Total	**543.9**

5.1.5 Calculation of Required Reductions for Dry Weather

The fact that the WMP conservatively establishes control measures based on the design storm means that full attainment of all non-stormwater (dry weather) and stormwater (wet weather) limitations will be achieved by wet weather control measures implemented for the final compliance date. As such, the RAA for dry weather simply needs to demonstrate that wet weather control measures will also achieve the required dry weather reductions for interim milestones.

To calculate required reductions for dry weather, the data compiled for assessment of water quality priorities were analyzed. The water quality data are compared to the WQBELs where available or the water quality objectives to determine if the constituent exceeds the limitations in the past five years are presented in **Table 5-4**.

Table 5-4 Recent Exceedance of Water Quality Objectives

Constituent[1]	Within WMP Boundary[2] (Freshwater)	Downstream of WMP	
		Freshwater	San Gabriel River Estuary
Copper	NA	Yes[3]	Yes[3]
Lead	NA	No[3]	Yes
Selenium	NA	Yes[3]	No
Zinc	NA	Yes[3]	Yes
Nickel	NA	No	Yes
E. coli (Indicator Bacteria)	NA	Yes	Yes
Total Mercury	NA	Yes	No
Cyanide	NA	Yes	Yes
Diazinon	NA	Yes	N/A
Nitrite-N	NA	Yes	N/A
PAHs	NA	Yes	No

1. For some constituents, individual reaches may have higher or lower exceedance frequencies than shown in this table. Evaluation of the ability to list or delist a waterbody would need to be made on a reach-by-reach basis.
2. No data are available within the WMP area within the last 5-years
3. Frequency of exceedance is based on comparison to WQBELs.

The constituents in Category 1 and the location where the WQBELs apply are summarized in **Table 5-5**. Existing concentrations were compared to applicable WQBELs, as shown in **Table 5-6**. A summary of the applicable WQOs is presented in **Appendix D**. The required reductions were calculated based on the median existing concentrations (applicable to milestones) and 90th percentile existing concentrations (selected as a critical condition for application to final limits). In general, rates of exceedances for non-bacteria pollutants were very low for dry weather conditions, such that comparison of 90th percentile concentrations to the targets results in 0% required reduction. For bacteria, the median concentration of *E. coli* was below the single sample maximum, but the 90th percentile value corresponds to a required dry weather reduction of 70% for attainment of final limits. In other words, for dry weather, the limiting pollutant is *E. coli*. Available data suggest that metals are attaining during dry weather conditions, though this will be re-evaluated during CIMP implementation.

Table 5-5 Category 1 Water Body-Pollutants with WQBELs

	San Gabriel River Reach		San Jose Creek Reach		Puddingstone Reservoir	Santa Ana River
Constituent	**2**	**3**	**1**	**2**		
Lead (Wet)	E					
Selenium (Dry)			E	E		
Chlordane (Sediment & Water Column)					E	
DDT (Sediment & Water Column)					E	
Dieldrin (Sediment & Water Column)					E	
Mercury (tissue and water column)					E	
PCBs (Sediment and Water Column)					E	
Total Nitrogen					E	
Total Phosphorus					E	
E. Coli						E/R
Fecal Coliform						E/R

R - Receiving water limit established by a TMDL

E - Effluent limit established based on a TMDL. The wording of the permit suggests that for copper and lead WQBELs apply to all upstream reaches and tributaries for wet weather WLAs, but only to the listed reaches during dry weather.

Table 5-6
Calculated Required Reductions for Dry Weather Components of the ESGV WMP

Waterbody	Pollutant	WQBEL/ Target	Required Reduction for Assessment of Milestones (based on median concentrations)		Required Reduction for Assessment of Final Limits (based on 90th percentile concentrations)	
			50th Percentile Existing Concentration	Percent Reduction based on Mean 50th Percentile Load	90th Percentile Existing Concentration	Percent Reduction based on Mean 90th Percentile Load
Thompson Creek[1]	Pb µg/L	3.2	0.78	**0%**	2.47	0%
	Zn µg/L	121.7	30.47	**0%**	74.68	0%
	Se[2] µg/L	5	1.07	**0%**	2.67	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
San Dimas Wash	Cu µg/L	18.7	4.56	**0%**	10.54	0%
	Pb µg/L	3.2	0.78	**0%**	2.47	0%
	Zn µg/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%
Puddingstone Inflow	Cu µg/L	18.7	4.56	**0%**	10.54	0%
	Pb µg/L	3.2	0.78	**0%**	2.47	0%
	Zn µg/L	121.7	30.47	**0%**	74.68	0%
	E. coli MPN/100ml	235	130	**0%**	794.78	70%

1 Thompson Creek transitions into San Jose Creek Reach 2 within the WMP Area.

2 Selenium exceedances were observed downstream of the ESGV WMP area, however, no exceedances were observed within the WMP area. Therefore, no reductions necessary. CIMP monitoring will determine if future reductions are necessary through the adaptive management process.

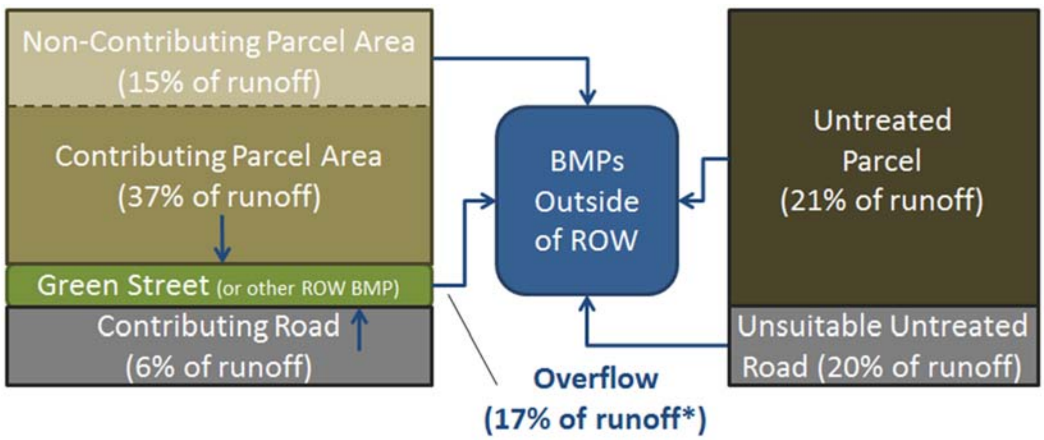
5.2 BMP CAPACITIES TO RETAIN THE 85TH PERCENTILE STORM FOR FINAL COMPLIANCE

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. For each jurisdiction, the design storm runoff volume serves as the compliance target for each of its subwatersheds. As long as the volume associated with the 85th percentile storm is retained within a subwatershed (prior to interim dates for interim volumes and prior to final dates for final volumes), then that subwatershed is in compliance with the receiving water limitations and WQBELs of the Permit (see Section E.2.e).

In order to provide the initial BMP scenario for WMP implementation, categories of BMPs and their capacities that could be used to retain the 85th percentile storm were analyzed. Two broad categories of BMPs – BMPs inside the right of way (ROW BMPs) and BMPs outside the ROW (non-ROW BMPs) – were used to describe the networks of BMPs needed to retain the 85th percentile storm, as shown in **Figure 5-18**. By focusing the BMP analysis on ROW versus non-ROW, the analysis emphasizes location/opportunities to capture stormwater, as the ROW and public parcels are where MS4 BMPs can be implemented most cost-effectively.[2] Runoff from non-MS4 facilities was also estimated such that the WMP does not commit the Group to retain runoff that is the responsibility of non-MS4 sources.

The overall approach for conducting the capacity analysis described below is represented in **Figure 5-19**, which cumulatively adds the volume reductions from these different BMP categories to retain the design storm volumes. The baseline "runoff balance" between ROW and non-ROW areas is summarized in **Figure 5-18** and detailed in **Table 5-7** for the four RAA assessment points – Thompson Creek, San Dimas Wash, Puddingstone Reservoir and Walnut Creek. See **Figure 5-20** for an index of subwatersheds in the WMP area (the index numbers are used in detailed tables including **Table 5-7**).

Figure 5-18
Representation of Right of Way and non-Right of Way BMPs and Stormwater Routing



[2] A significant portion of runoff does not drain to the streets/ROW and so capture of that runoff in the ROW [e.g., with green streets] is not feasible – non-ROW BMPs are the only option [e.g., regional BMPs prior to discharge to receiving water].

Figure 5-19
Representation of the Capacity Analysis to Achieve Volume Reductions for the 85th Percentile Storm

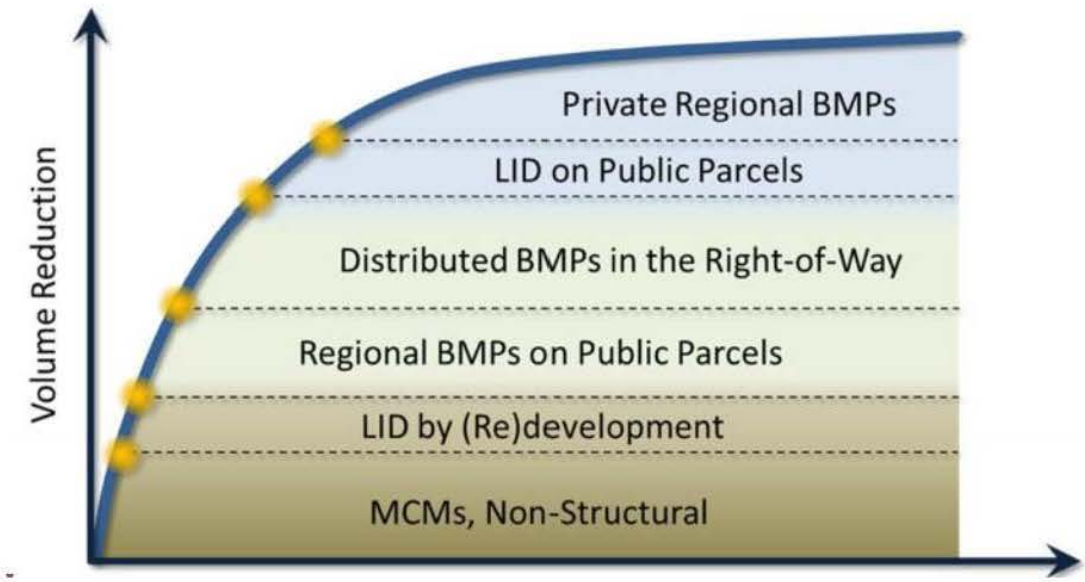


Figure 5-20
Index of Subwatersheds in the ESGV WMP Area

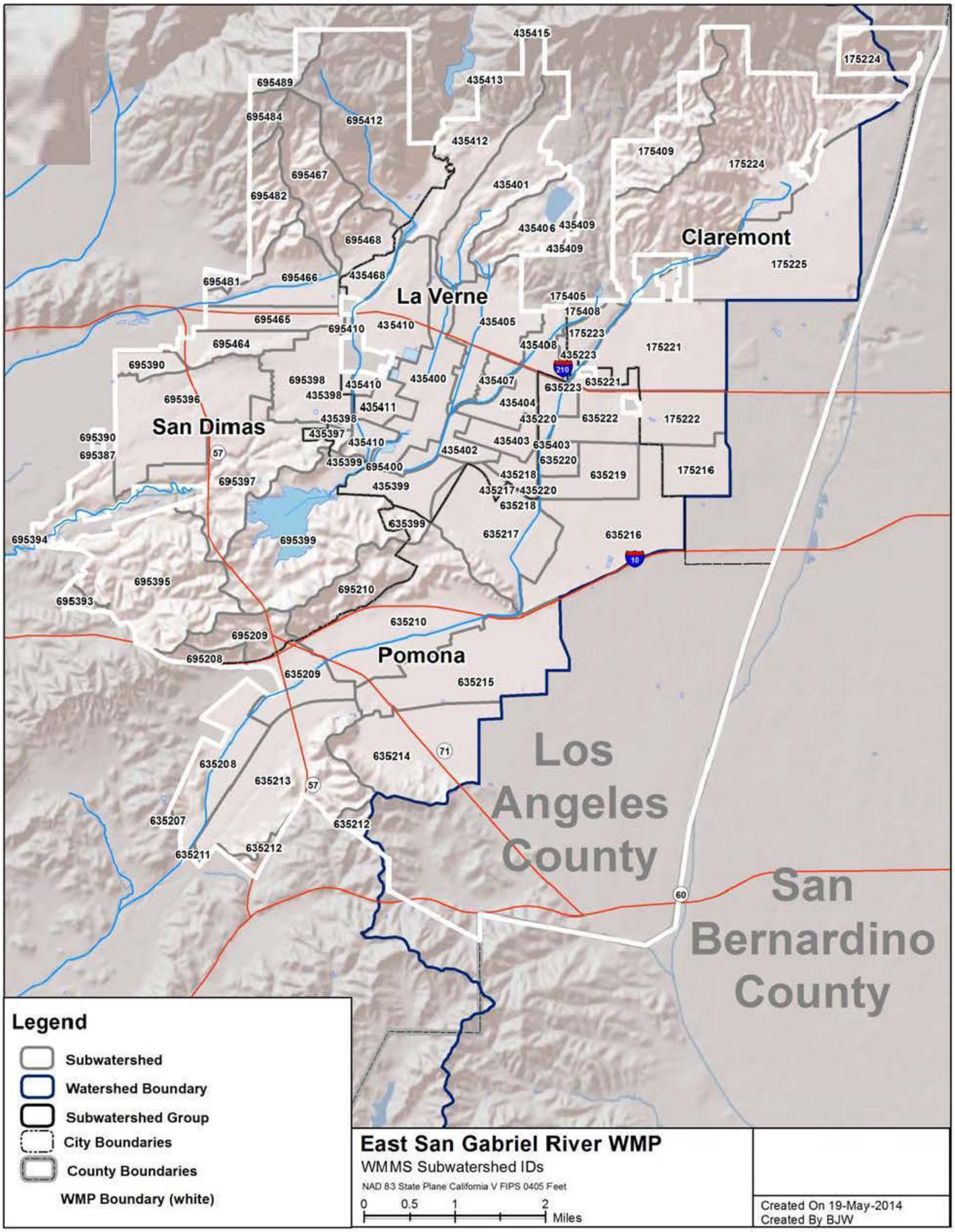


Table 5-7
Overall Watershed-specific Design Storm Volumes and Balance of ROW and non-ROW Runoff Volumes

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
Puddingstone	5400*	5400*	22.20	9.28	1.23	5.96	2.18	3.56
	5402	5402	7.80	2.48	0.34	1.75	1.01	2.23
	5405*	5405*	19.28	9.35	1.06	2.34	3.55	2.98
	5407	5407	5.97	4.17	0.65	1.04	0.08	0.03
	5408*	5408*	8.24	2.40	0.21	0.93	3.45	1.24
	5410*	5410*	21.77	7.44	0.87	3.07	6.00	4.39
	to 5401	to 5401	11.06	4.73	1.03	1.44	2.87	0.99
	to 5403*	to 5403*	5.93	3.22	0.67	0.80	0.01	1.23
	to 5404	to 5404	6.98	3.88	0.59	0.97	0.25	1.29
	to 5406	to 5406	7.26	2.10	0.28	1.53	3.36	-
	to 5409*	to 5409*	0.22	0.10	0.00	0.02	0.09	-
	to 5411*	to 5411*	6.62	3.89	0.55	1.56	0.01	0.60
Puddingstone Total			123.34	53.03	7.48	21.43	22.88	18.53
San Dimas Wash	5412*	5412*	5.59	1.60	0.45	0.83	1.97	0.75
	5464	5464	4.59	1.51	0.24	0.48	0.82	1.54
	5465	5465	9.11	1.73	0.12	1.21	1.82	4.23
	5466	5466	6.10	2.83	0.71	0.72	0.89	0.96
	5468*	5468*	7.95	3.56	0.80	1.96	0.81	0.82

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)

Table 5-7 (continued)

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
	5481	5481	1.42	0.97	0.13	0.24	0.00	0.07
	5482	5482	0.50	0.09	0.02	0.02	0.28	0.09
	5484	5484	0.00	-	-	-	0.00	-
	5489	5489	0.00	-	-	-	0.00	-
	to 5413	5413	0.00	-	-	-	0.00	-
		5415	0.00	-	-	-	0.00	-
		to 5413 Total	0.00	-	-	-	0.00	-
	to 5467	to 5467	0.95	0.05	0.00	0.03	0.82	0.06
San Dimas Wash Total			36.21	12.33	2.47	5.48	7.41	8.52
Thompson Wash/	5207	5207	0.04	-	-	-	0.04	-

San Jose Creek	5211	5211	0.02	-	-	-	0.02	-
	5212	5212	1.98	0.02	0.00	0.01	0.57	1.38
	5213	5213	31.32	6.41	0.50	4.57	14.66	5.18
	5214	5214	26.09	10.64	1.40	4.13	4.27	5.64
	5215	5215	42.55	14.42	2.06	8.48	7.55	10.05
	5217*	5217*	42.36	17.63	3.15	4.96	13.99	2.63
	5220*	5220*	11.89	5.10	0.68	3.27	0.99	1.86
	5223*	5223*	4.39	1.96	0.36	0.50	0.87	0.69
	to 5208*	5208	12.88	3.84	0.24	2.50	3.67	2.63
		5209	18.51	2.53	0.15	0.98	4.40	10.46

Table 5-7 (continued)

Watershed	Grouped SWS ID	Individual SWS ID	Total Design Storm Volume (acre-ft)	Volume from Parcel Areas Draining to Rights-of-Way of Suitable Roads (acre-ft)	Volume from Suitable Roads Draining to Rights-of-Way (acre-ft)	Volume from Parcel Areas Adjacent to Suitable Roads but not Draining to Rights-of-Way (acre-ft)	Volume from Parcels Adjacent to Unsuitable Roads (both Draining to and Draining Away from Rights-of-Way; acre-ft)	Volume from Unsuitable Roads Draining to Rights-of-Way (acre-ft)
	to 5208*	5210	32.11	9.64	0.95	2.84	8.21	10.46
		to 5208* Total	63.51	16.01	1.34	6.32	16.29	23.55
	to 5216*	to 5216*	48.63	25.43	3.80	9.23	2.16	8.01
	to 5218*	to 5218*	6.09	2.51	0.21	1.39	0.72	1.25
	to 5219	to 5219	14.09	5.04	0.84	3.99	2.00	2.22
	to 5221*	to 5221*	33.84	16.00	2.39	4.33	3.74	7.39
	to 5222*	to 5222*	21.81	12.22	2.11	3.62	1.01	2.84
	to 5224	to 5224	7.32	1.49	0.16	0.79	4.12	0.76
	to 5225	to 5225	22.69	10.00	1.83	3.65	2.56	4.64

Thompson Wash/ San Jose Creek Total			378.62	144.89	20.82	59.25	75.58	78.08
Walnut Creek	5387	5387	0.81	0.55	0.04	0.14	0.00	0.08
	5390	5390	3.69	2.04	0.30	0.70	0.23	0.42
	5393	5393	0.01	-	-	-	0.01	0.00
	5394	5394	0.00	-	-	-	-	-
	5395	5395	21.11	2.71	0.55	0.69	12.84	4.32
	5397*	5397*	19.15	4.10	0.33	2.18	7.63	4.91
	5399*	5399*	18.62	0.95	0.01	1.33	2.21	14.11
	to 5396	to 5396	42.99	20.49	3.07	7.58	4.89	6.95
	to 5398*	to 5398*	20.58	10.82	1.71	4.13	1.01	2.91
Walnut Creek Total			126.96	41.66	6.01	16.74	28.83	33.71
Grand Total			665.13	251.90	36.78	102.90	134.70	138.84

5.2.1 Modeling of Individual BMP Types to Achieve Design Storm Retention

The runoff balance for ROW and non-ROW areas (**Figure 5-18** and **Table 5-7**) provides the foundation for BMP modeling to develop the initial BMP scenario for the ESGV WMP. Six types of BMPs were represented using LSPC and SUSTAIN as described in **Table 5-8**. The BMP modeling provides a robust initial strategy for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities provide reasonable assurance for attaining Permit limitations, though adaptive management will be used to refine these strategies over time.

The details of the BMP modeling are provided in **Appendix A**. In general, modeling analyses were used to determine the capacity of green streets, LID and rooftop runoff reduction to retain the design storm. It was common for maximum implementation of these control measures to be insufficient for retaining the design storm runoff from a subwatershed. In this case, the remaining capacity was assigned to regional BMPs, which will be identified in the future (likely on a combination of public and private parcels). The summary of required BMP capacities by jurisdiction for ROW and non-ROW BMPs is provided in **Table 5-9**.

Table 5-8
Types of BMPs Simulated for Design Storm Retention

BMP Type	Category	Type	Description
Green streets	ROW	Distributed	Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane.
LID due to new/ redevelopment	Non-ROW	Distributed	Retention of runoff from new and redeveloped private parcels subject to LID ordinances.
LID on public parcels	Non-ROW	Distributed	Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, dry wells, etc.)
Rooftop Runoff Reduction	Non-ROW	Distributed	Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
Regional BMPs	Non-ROW	Regional	Regional BMPs to capture and retain runoff from relatively large upstream areas prior to discharge to receiving waters. In general, the remaining runoff after implementation of the previous BMP categories was assigned to regional BMPs.

Table 5-9
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Required MS4 Treatment Capacity, acre-ft*	Potential Non-ROW BMP Capacity, acre-ft	Potential Capacity of Distributed ROW BMPs, acre-ft	Remaining Reduction assigned to Regional BMPs, acre-ft
Claremont	85.2	12.66 (15%)	32.5 (38%)	40.0 (47%)
La Verne	126.9	13.34 (11%)	39.2 (31%)	74.4 (59%)
Pomona	204.9	53.18 (26%)	55.9 (27%)	95.8 (47%)
San Dimas	126.9	14.72 (12%)	33.4 (26%)	78.7 (62%)
Total	**543.9**	**93.91 (17%)**	**161.0 (30%)**	**289.0 (53%)**

*Excludes design storm runoff from non-MS4 permitted facilities and California Department of Transportation (Caltrans) and County of Los Angeles islands

5.2.2 Final MS4 Compliance Targets and BMP Capacities by Subwatershed

The culmination of the analyses for this WMP is two key metrics, one for Permit compliance and one for WMP implementation, as follows (**Table 5-10** thru **Table 5-13**):

1. **Final MS4 Compliance Targets based on design storm runoff volume:** the runoff volume from the simulated design storm for each subwatershed, minus contributions from Caltrans and industrial permittees, is the ultimate final compliance metric for the Claremont, La Verne, Pomona and San Dimas. See column with orange font labeled "Compliance Target" in **Table 5-10** thru **Table 5-13**. Note: the Group will continue to inspect industrial facilities under the Permit inspection programs. In addition, the Group will work with Caltrans on potential options for collaborating during WMP implementation.

2. **Initial scenario of BMPs to retain design storm runoff volume:** the specific BMPs used to retain the design storm volume are not, per se, a component of compliance determination. Instead, over time each agency will report and demonstrate that the *cumulative* effect of projects implemented over time add up to the required design storm retention volumes for interim milestones and final targets. However, the initial scenario of BMPs for WMP implementation and their costs may be the most beneficial outcome of the WMP. See columns with orange font labeled "Implementation Plan" in **Table 5-10** thru **Table 5-13**, which represent the initial WMP implementation scenario. Over time, through adaptive management, the cities will likely "shift" from among different types of BMPs (e.g., increase implementation of green streets and reduce implementation of regional BMPs) or substitute alterative BMPs altogether (e.g., implement dry wells instead of green streets). These shifts will be supported by analyses to show the substituted BMPs provide an equivalent volume reduction as the replaced BMPs. Initial analyses to support adaptive management are provided in **Appendix A**.

The final compliance targets in **Table 5-10** thru **Table 5-13** are used to develop compliance targets for interim milestones in the next subsection. Recall the index of subwatersheds[3] in presented in **Figure 5-20**. The ROW and non-ROW BMP capacities for the initial WMP scenario are also shown graphically in **Figure 5-21** and **Figure 5-22**.

[3] The 67 LSPC subwatersheds within the WMP boundary were overlaid with the jurisdictional boundaries to create 98 city-subwatersheds. The city-subwatershed ID is composed of the jurisdictional identifier (the first two digits) and the original LSPC subwatershed ID (the last four digits). To identify the geographical relationship between the LSPC model subwatersheds and the city-subwatersheds shown in Figure 5-20, the last four digits of the city-subwatershed correspond to the LSPC Subwatershed IDs.

Table 5-10– La Verne Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
				Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	5.10	1.90	10,043	0.07	0.14	0.00	3.00	-	-	-
	5468*	5468*	3.20	2.03	9,313	0.02	0.12	0.00	1.03	-	-	-
		5413	0.00	-	-	-	-	-	-	0.00	-	-
		5415	0.00	-	-	-	-	-	-	0.00	-	-
	to 5413	to 5413 Total	0.00	-	-	-	-	-	-	0.00	-	-
San Dimas Wash Total			8.30	3.93	19,356	0.09	0.26	0.00	4.02	0.00	-	-
Thompson Wash/ San Jose Creek	5217*	5217*	1.02	0.18	137	0.02	0.00	0.02	0.80	-	-	3.17
	5220*	5220*	0.29	0.05	232	0.00	0.01	0.00	0.23	-	0.02	-
	5223*	5223*	1.07	0.13	596	0.00	0.09	0.02	0.83	-	-	-
	5218*	5218*	4.98	1.02	3,873	0.22	0.30	0.05	3.39	-	0.66	0.35
	5221*	5221*	0.00	-	-	-	-	-	0.00	-	-	-
San Jose Creek Total			7.34	1.37	4,838	0.25	0.39	0.09	5.25	-	0.68	3.51
Walnut Creek	5397*	5397*	1.25	0.36	2,726	0.02	0.05	0.00	0.83	-	-	-
	5399*	5399*	2.59	0.50	422	0.00	0.00	0.01	2.08	-	-	11.66
	5398*	5398*	1.34	0.35	1,316	0.03	0.05	0.01	0.90	-	0.29	-
Walnut Creek Total			5.19	1.21	4,464	0.05	0.10	0.01	3.81	-	0.29	11.66
Puddingstone	5400*	5400*	13.88	4.09	20,170	1.01	0.52	0.16	8.09	-	1.00	7.32
	5402	5402	6.87	1.19	4,688	0.19	0.15	0.06	5.29	-	0.77	0.17
	5405*	5405*	19.27	5.69	25,206	0.20	1.02	0.28	12.09	-	-	-
	5407	5407	5.97	1.62	6,897	2.26	0.14	0.06	1.89	-	-	-
	5408*	5408*	6.39	1.12	5,003	0.12	0.45	0.10	4.60	-	-	-
	5410*	5410*	16.67	4.90	22,611	1.78	0.83	0.11	9.04	-	1.91	2.30
	5401	5401	11.06	5.20	25,679	0.28	0.42	-	5.16	-	-	-
	5403*	5403*	5.93	2.38	12,133	0.07	0.21	0.04	3.22	-	-	-
	5404	5404	6.98	2.28	10,126	0.46	0.36	0.08	3.80	-	-	-
	5406	5406	7.26	2.27	11,373	0.13	0.18	0.00	4.68	-	-	-
	5409*	5409*	0.22	0.11	1,027	0.00	0.01	-	0.09	-	-	-
	5411*	5411*	5.54	1.80	8,344	0.01	0.32	0.09	3.32	-	-	1.08
Puddingstone Total			106.05	32.65	153,256	6.53	4.60	0.98	61.29	-	3.68	10.86
Grand Total			126.88	39.16	181,915	6.91	5.35	1.08	74.37	0.00	4.64	26.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-11– San Dimas Design Final Compliance Targets and Initial WMP Implementation Scenario

			COMPLIANCE TARGET:	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
				DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
Receiving Water	**Grouped SWS ID***	**Individual SWS ID**	**85^{th} Percentile, 24-hour Storm Volume to be Retained by MS4** (acre-ft)	Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
San Dimas Wash	5412*	5412*	0.49	0.06	574	0.13	0.01	-	-	0.29	-	-
	5464	5464	3.76	1.50	9,025	0.23	0.13	0.03	1.86	-	0.83	-
	5465	5465	5.30	1.32	5,325	-	0.16	0.04	3.79	-	3.19	0.61
	5466	5466	6.10	2.50	15,331	0.22	0.23	0.12	3.04	-	-	-
	5468*	5468*	4.46	1.75	8,319	0.06	0.09	0.00	2.57	-	0.05	0.24
	5467	5467	0.95	0.02	116	0.39	0.01	0.00	-	0.54	-	-
San Dimas Wash Total			21.07	7.15	38,691	1.03	0.62	0.19	11.26	0.83	4.07	0.86
Thompson Wash/ San Jose Creek	to 5208*	5208	0.13	0.00	13	0.00	0.00	0.00	-	0.12	0.88	-
		5209	1.53	0.02	123	0.01	0.09	0.02	1.39	-	3.06	-
		5210	0.26	0.00	-	0.17	-	-	-	0.10	0.11	-
		to 5208* Total	1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
San Jose Creek Total			1.92	0.03	136	0.18	0.09	0.02	1.39	0.22	4.04	-
Walnut Creek	5387	5387	0.81	0.26	1,182	-	0.07	0.02	0.46	-	-	-
	5390	5390	3.56	1.66	7,505	0.32	0.15	0.04	1.39	-	0.13	-
	5393	5393	0.01	-	-	-	0.00	-	-	0.01	-	-
	5394	5394	0.00	-	-	-	-	-	0.00	-	-	-
	5395	5395	20.98	3.07	15,544	0.08	0.76	0.08	16.98	-	0.13	-
	5397*	5397*	14.58	1.99	8,140	1.45	0.42	0.26	10.45	-	2.86	0.46
	5399*	5399*	2.54	0.12	539	0.66	0.04	0.04	-	1.70	1.71	0.00
	5396	5396	39.92	11.77	50,697	2.73	1.42	0.83	23.18	-	2.75	0.32
	5398*	5398*	18.68	6.52	27,599	1.29	0.81	0.28	9.77	-	0.27	-
Walnut Creek Total			101.08	25.39	111,206	6.53	3.67	1.55	62.23	1.71	7.85	0.77
Puddingstone	5400*	5400*	0.00	-	-	0.00	-	-	0.00	-	-	-
	5410*	5410*	0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
	5411*	5411*	0.00	-	-	0.00	0.00	0.00	0.00	-	-	-
Puddingstone Total			0.89	0.27	1,246	0.38	0.03	0.00	0.22	-	0.00	-
Big Dalton Wash	5481	5481	1.42	0.54	2,986	0.32	0.06	0.01	0.49	-	-	-
	5482	5482	0.50	0.07	451	0.00	0.03	0.01	-	0.39	-	-
	5484	5484	0.00	-	-	-	-	-	-	0.00	-	-
	5489	5489	0.00	-	-	-	-	-	-	0.00	-	-
Big Dalton Wash Total			1.92	0.61	3,437	0.32	0.09	0.02	0.49	0.39	-	-
Grand Total			126.89	33.44	154,716	8.44	4.50	1.78	75.58	3.15	15.97	1.63

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-12– Pomona Final Compliance Targets and Initial WMP Implementation Scenario

				IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT								
			COMPLIANCE TARGET:	DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY		DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM					NON-MS4 RUNOFF	
Receiving Water	**Grouped SWS ID***	**Individual SWS ID**	**85th Percentile, 24-hour Storm Volume to be Retained by MS4** (acre-ft)	Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	Estimated Equivalent Length of Green Street BMPs (ft)	Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5207	5207	0.00	-	-	0.00	-	-	-	0.00	-	0.04
	5211	5211	0.02	-	-	0.00	-	-	-	0.02	-	-
	5212	5212	0.87	0.03	166	0.11	0.02	0.01	0.70	-	1.12	-
	5213	5213	24.98	2.45	8,240	5.78	0.42	2.35	13.98	-	3.15	3.19
	5214	5214	22.61	8.44	35,542	1.48	0.73	3.06	8.90	-	2.71	0.76
	5215	5215	37.41	8.70	34,802	0.88	1.04	6.14	20.64	-	4.29	0.85
	5217*	5217*	8.22	2.42	48,744	0.71	0.26	0.40	4.43	-	0.11	29.85
	5220*	5220*	10.16	2.76	9,684	0.26	0.37	1.82	4.95	-	0.81	0.62
	5223*	5223*	0.39	0.11	710	0.02	0.03	0.15	0.07	-	-	-
	to 5208*	5208	5.49	0.99	4,452	0.87	0.47	1.76	1.40	-	1.29	5.09
		5209	7.78	1.90	7,949	0.56	0.19	0.97	4.17	-	5.64	0.51
		5210	25.09	7.52	38,068	2.86	1.10	3.22	10.39	-	6.54	0.12
		to 5208* Total	38.36	10.40	50,469	4.30	1.76	5.95	15.96	-	13.47	5.72
	5216*	5216*	34.15	12.19	56,820	3.14	1.31	4.67	12.83	-	1.01	-
	5218*	5218*	0.10	-	-	-	-	-	0.10	-	-	-
	5219	5219	13.12	3.43	10,638	0.17	0.21	1.40	7.92	-	0.96	-
	5221*	5221*	4.26	0.80	3,395	-	0.17	1.56	1.73	-	-	-
	5222*	5222*	9.99	4.15	19,490	0.48	0.39	1.53	3.44	-	-	-
San Jose Creek Total			204.64	55.88	278,700	17.33	6.71	29.04	95.66	0.02	27.63	41.03
Walnut Creek	5399*	5399*	0.11	-	-	0.08	-	-	-	0.03	0.00	-
Walnut Creek Total			0.11	-	-	0.08	-	-	-	0.03	0.00	-
Puddingstone	5408*	5408*	0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
	5403*	5403*	0.00	0.00	0	-	-	0.00	0.00	-	-	-
Puddingstone Total			0.16	0.00	17	-	0.00	0.02	0.13	-	-	-
Grand Total			204.91	55.89	278,717	17.41	6.71	29.06	95.79	0.06	27.64	41.03

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Table 5-13– Claremont Final Compliance Targets and Initial WMP Implementation Scenario

Receiving Water	Grouped SWS ID*	Individual SWS ID	COMPLIANCE TARGET: 85th Percentile, 24-hour Storm Volume to be Retained by MS4 (acre-ft)	IMPLEMENTATION PLAN: APPROACH TO ACHIEVE COMPLIANCE TARGETS, SUBJECT TO ADAPTIVE MANAGEMENT — DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Total Estimated Design Storm Volume to be Retained in Right-of-Way (acre-ft)	DESIGN STORM RUNOFF TO BE RETAINED IN RIGHTS-OF-WAY: Estimated Equivalent Length of Green Street BMPs (ft)	DESIGN STORM RUNOFF TO BE RETAINED OUTSIDE OF RIGHTS-OF-WAY BUT PRIOR TO DISCHARGE FROM MS4 COLLECTION SYSTEM: Estimated Potential Volume to be Retained by LID on Public Parcels (acre-ft)	Estimated Potential Volume to be Retained by Downspout Disconnection Program (acre-ft)	Estimated Potential Volume to be Retained by LID Ordinance of New/ Redevelopment (acre-ft)	Remaining Capacity to the Retained by Other BMPs, Potentially Including Regional BMPs (acre-ft)	Total Design Storm Volume that will not be Retained (acre-ft)	NON-MS4 RUNOFF: Estimated Potential Volume to be Retained by CALTRANS and other Transportation Entities (acre-ft)	NON-MS4 RUNOFF: Estimated Potential Volume to be Retained by Industrial Permittees (acre-ft)
Thompson Wash/ San Jose Creek	5223*	5223*	2.90	1.70	9,186	0.04	0.11	0.03	1.02	-	0.03	-
	5216*	5216*	12.69	3.10	10,684	0.17	0.62	1.60	7.20	-	0.78	-
	5221*	5221*	26.52	10.98	49,192	3.02	1.05	1.61	9.86	-	3.06	-
	5222*	5222*	11.82	4.76	20,932	0.83	0.50	0.54	5.19	-	-	-
	5224	5224	7.32	0.98	5,319	0.23	0.30	0.38	-	5.42	0.00	-
	5225	5225	22.23	10.81	53,058	0.75	0.71	0.13	9.82	-	0.46	-
San Jose Creek Total			83.48	32.34	148,371	5.04	3.29	4.30	33.09	5.42	4.34	-
Puddingstone	5405*	5405*	0.00	-	-	-	0.00	0.00	0.00	-	-	-
	5408*	5408*	1.69	0.16	302	0.01	0.01	0.01	1.51	-	-	-
	5409*	5409*	0.00	-	-	0.00	-	-	-	0.00	-	-
Puddingstone Total			1.70	0.16	302	0.01	0.01	0.01	1.51	0.00	-	-
Grand Total			**85.18**	32.49	**148,673**	**5.05**	**3.30**	**4.31**	34.60	5.42	**4.34**	**-**

* asterisk indicates SWS group is divided between one or more jurisdictions – opportunities for regional collaboration should be pursued.

Figure 5-21
ROW BMP Volume Reduction for Initial WMP Scenario to Achieve Final Compliance Targets

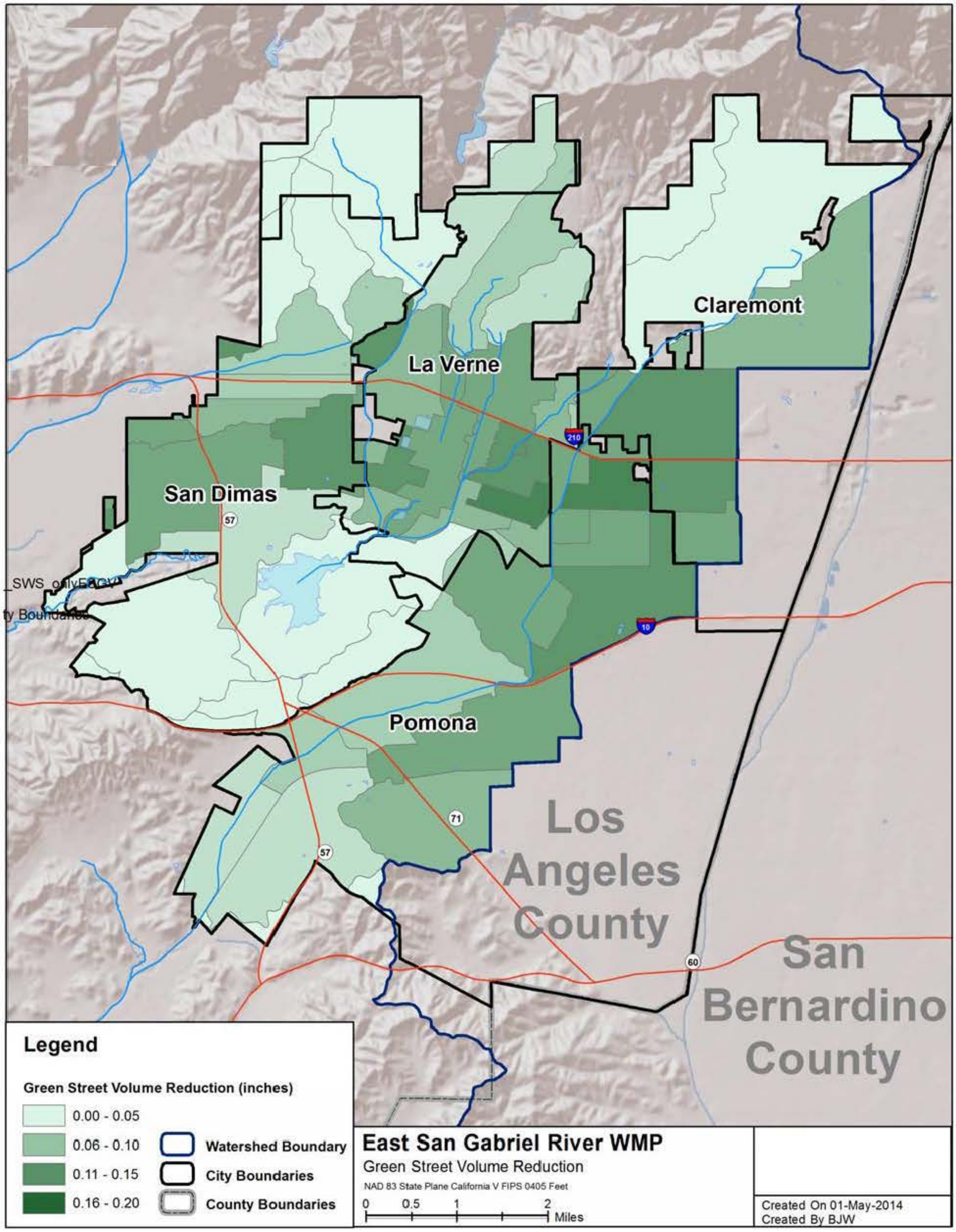
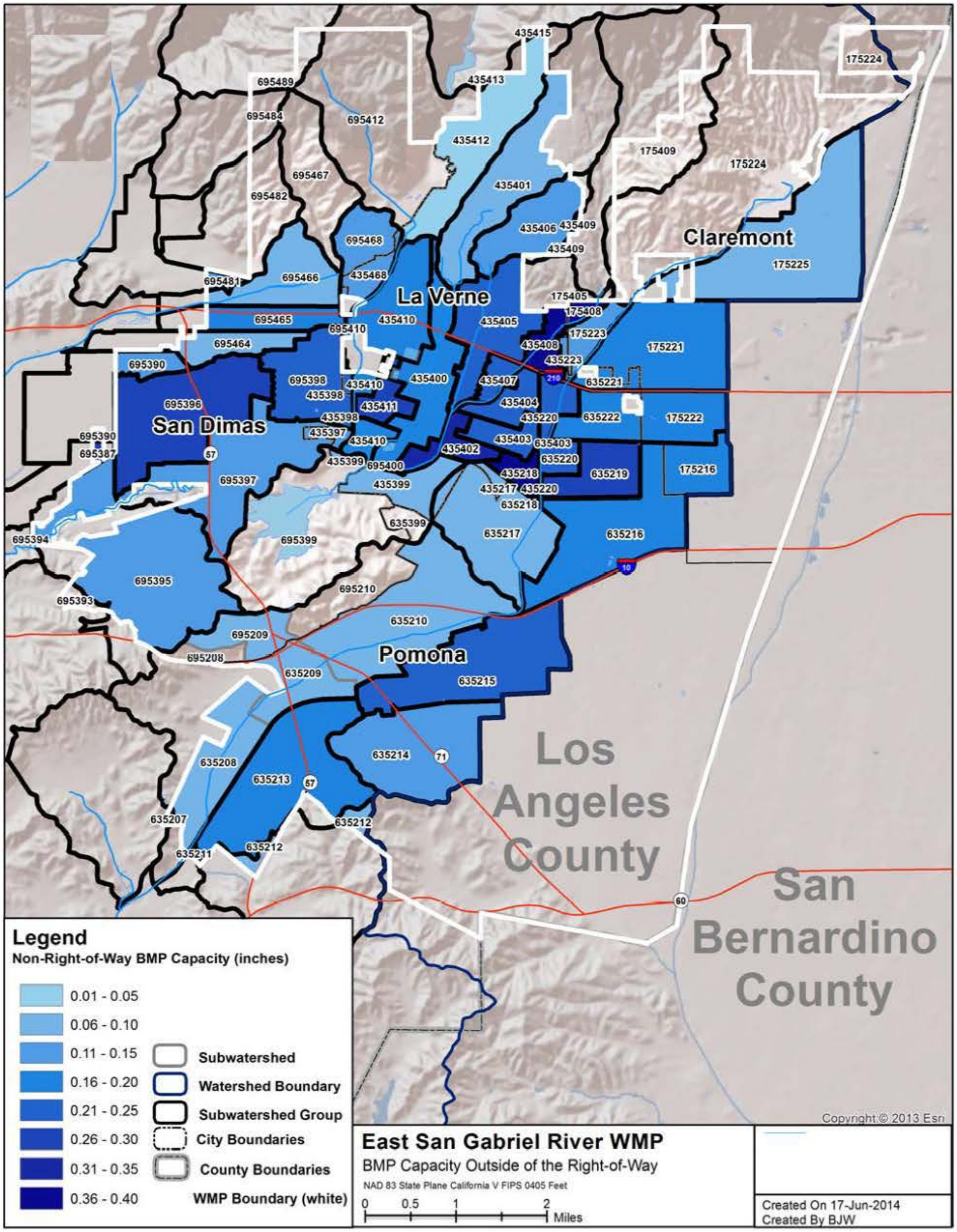


Figure 5-22
BMP Capacity Outside of the Right-of-Way for Initial WMP Scenario to Achieve Final Compliance Targets



5.3 COMPLIANCE TARGETS AND CONTROL MEASURES FOR ATTAINMENT OF INTERIM MILESTONES

The Permit prescribes that scheduling of multiple pollutants within the WMP should consider whether "class" of the non-TMDL pollutants are similar to TMDL pollutants, where class considers pollutant fate and transport, control measures, and BMP implementation timeline. For the design storm approach, achievement of the non-stormwater and stormwater retention goals represents compliance with all TMDL classes and pollutants. As such, attainment of the design storm volumes to address the San Gabriel River Metals TMDL will also address the other TMDLs in the watershed (Category 1 WQ Priorities), the 303(d) listings in the WMP area (Category 2 WQ Priorities) and Category 3 WQ Priorities in the WMP area.

To establish BMP scheduling for the WMP, the percent milestones of the San Gabriel River Metals TMDL were applied directly to the design storm volumes. The San Gabriel River Metals TMDL milestones are expressed in terms of a percentage of the MS4 area meeting WQBELs, and the equivalent WMP milestones are expressed as the percentage of the design storm retention volume achieved for each jurisdiction. Implementation of BMP capacities on the schedule listed in **Table 5-14** represents compliance with all RWLs and WQBELs of the Permit. As part of the adaptive management process, capacities will be modified based on monitoring through the CIMP for the WMP area. Annual reporting by each jurisdiction will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets in **Table 5-15.** During adaptive management, these capacities may be reduced if monitoring data suggest that water quality conditions are better than assumed when the RAA herein was developed. Because the 10% milestone falls within the current Permit term, it is described in more detail below.

Note that the design storm target also addresses dry weather milestones because non-stormwater is also retained. As described in Section 5.1.4, required dry weather reductions for metals are very low and implementation of control measures to achieve wet weather milestones has reasonable assurance of also attaining dry weather milestones. For bacteria, the scheduling of implementation for the wet weather milestones of metals TMDL will be used as the schedule for dry weather bacteria compliance (10% milestone in 2017, 35% milestone in 2020, 65% milestone in 2023 and final compliance by 2026). Attainment of the dry weather bacteria TMDL by 2026, within 12 years, is well within the timeline provided for other bacteria TMDLs. The LA River Bacteria TMDL provided a 25-year dry weather compliance schedule.

Table 5-14
Schedule of Total Maximum Daily Loads and Milestones for the ESGV Group WMP

TMDL	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestone (Bolded numbers indicated milestone deadlines within the current Permit term)[1]													
			2012	**2013**	**2014**	**2015**	**2016**	2017	2020	2023	2024	2026	2028	2030	2032	2036
San Gabriel River Metals	% of MS4 area Meets WQBELs	Dry						30%	70%	100%						
		Wet						10%	35%	65%		100%				
Los Angeles/ Long Beach Harbors Toxics	Meet WQBELs	All	12/28												3/23	
			Interim												Final	
Puddingstone Reservoir Nutrients, Mercury, and Toxics	Meet WLAs	All	USEPA TMDLs, which do not contain interim milestones or implementation schedule. The Permit (Part VI.E.3.c, pg. 145) allows MS4 Permittees to propose a schedule in the WMP.													

[1] The Permit term is assumed to be five years from the Permit effective date or December 27, 2017.

Table 5-15
Schedule of Control Measures and BMP Capacities to Interim Milestones for the ESGV WMP

Jurisdiction	Major Watershed	10% Milestone, Year 2017 (acre-ft)	35% Milestone, Year 2020 (acre-ft)	65% Milestone, Year 2023 (acre-ft)	100% Milestone, Year 2026 (acre-ft)
Claremont	Puddingstone	**See description in Section 5.3** 1. Implementation of Rooftop Runoff Reduction Program 2. LID due to new and re-development 3. Increased construction site inspections 3. Verification of post-construction BMPs 4. Increased catch basin cleaning	0.6	1.1	1.7
	San Jose Creek		29.2	54.3	83.5
	Claremont Total		**29.8**	**55.4**	**85.2**
La Verne	Puddingstone		37.1	68.9	106.1
	San Dimas Wash		2.9	5.4	8.3
	San Jose Creek		2.6	4.8	7.3
	Walnut Creek		1.8	3.4	5.2
	La Verne Total		**44.4**	**82.5**	**126.9**
Pomona	Puddingstone		0.1	0.1	0.2
	San Jose Creek		71.6	133.0	204.6
	Walnut Creek		0.0	0.1	0.1
	Pomona Total		**71.7**	**133.2**	**204.9**
San Dimas	Big Dalton Wash		0.7	1.2	1.9
	Puddingstone		0.3	0.6	0.9
	San Dimas Wash		7.4	13.7	21.1
	San Jose Creek		0.7	1.2	1.9
	Walnut Creek		35.4	65.7	101.1
	San Dimas Total		**44.4**	**82.5**	**126.9**
Total			***190.3***	***353.5***	***543.9***

5.3.1 Attainment of the 10% Milestone for the ESGV WMP

The 10% milestone for the San Gabriel River Metals TMDL requires that 10% of the WMP area be in compliance with applicable final metals RWLs and WQBELs. For application of the milestone to the entire WMP area for all water quality priorities, the milestone is interpreted to mean that 10% of the *required load reductions* are achieved by each jurisdiction (this interpretation is also consistent with other metals TMDLs). This interpretation means the 10% milestone may equate to less than an actual 10% reduction. For example, if the final required load reduction of the limiting pollutant was 70%, then the 10% milestone represents a 7% reduction. For the ESGV WMP, the limiting pollutant is likely zinc, which has required reductions of 60-70% in other areas/reaches for the San Gabriel River Metals TMDL. As such, it is expected the 10% milestone for the ESGV WMP represents a 7% reduction or less.

A series of control measures have been identified by the Group to achieve compliance with the 10% milestone, as shown in **Table 5-16**. These control measures will be implemented by each Group Member. All of these control measures represent *enhanced BMP implementation* from the baseline condition that existed prior to the 2012 Permit. A highlight of the suite of control measures for the 10% milestone is a Rooftop Runoff Reduction Program (Program), which will seek to incentivize control measures on private property to capture rooftop runoff prior to discharge to the MS4. The Program will emphasize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source. While the program will provide an important vehicle for educating the public on the need to retain stormwater runoff, the program will also be designed such that volume reductions are quantifiable and trackable. A detailed schedule for implementation of the Program is shown in **Table 5-17**. Additionally, other control measures identified for attainment of the 10% milestone are related to MCM requirements that increased in the current Permit (compared to previous Permit) including LID due to new/redevelopment, increased construction site inspections, verification of post-construction BMPs and increased catch basin cleaning. All of these measures have been shown to demonstrate load reduction in a watershed.

During adaptive management, if the 10% milestone is not attained in 2017, then the Group will develop alternate institutional controls or additional structural controls as necessary.

Table 5-16
Control Measures to be Implemented for Attainment of 10% Milestone[4]

BMP Type	Description of Control Measure/ Enhancement from Baseline
Planned or Recently Constructed BMPs within Permit Term	See **Table 4-2** for list of planned or recently constructed projects within the ESGV Group area.
Rooftop Runoff Reduction	Implement an incentive program for private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection, rain barrel deployment and other BMPs as needed (see **Table 5-17**).
LID due to new/redevelopment	The ESGV jurisdictions have reported 2 to 3 parcels per year being subject to LID requirements in recent years. By 2017, this represents an estimated 32 to 48 additional parcels being subject to LID retention standards based on the 85th percentile storm.
Enhanced Construction Site Inspections	The previous permit (Part 4.E.2.b) required a minimum of one construction site inspection during the wet season. The new permit (Part VI.D.8.j) requires a minimum of three construction inspections for each construction project: prior to land disturbance, during active construction, during final landscaping/site stabilization. In addition, the new permit states that construction sites larger than 1 acre shall be inspected (1) when two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA, (2) within 48-hours of a ½-inch rain event, and (3) at least once every two weeks. If the construction site is not deemed a significant threat to water quality and does not discharge to a tributary listed by the state as an impaired water for sediment or turbidity under the CWA §303(d), the new permit states that inspection frequency shall be at least monthly.
Verification of Post Construction BMPs	The previous permit (Part 4.D.8**)** indicated that verification of post-construction (SUSMP) BMPs included, at a minimum, written conditions which assign responsibility to a developer, public entity, or Home Owners Association to conduct maintenance on post-construction BMPs at least once a year. The new permit (Part VI.D.7.d.iv) expands on these requirements by requiring each permittee to implement a tracking system and inspection and enforcement program for post-construction BMPs. The new permit requires the development of a post-construction BMP maintenance inspection checklist and requires inspection at least once every 2 years after project completion.
Enhanced Catch Basin Cleaning	The new permit (Part VI.D.9. h.vii) requires that the Permittee shall install trash excluders, or equivalent devices, on or in catch basins or outfalls to prevent the discharge of trash to the MS4 or receiving water no later than four years after the effective date of the new Permit.

[4] Control Measures for Attainment of 10% Milestone will be implemented by each Group Member.

Table 5-17
Schedule for Implementation of the Rooftop Runoff Reduction Program[5]

Achievement	Completion Date
Develop draft Rooftop Runoff Program including the source control BMPs to be incentivized. The effort will collect estimates the proportion of current parcels (by land use type) with downspouts directly plumbed into MS4 collection system. The program will also evaluate the feasibility of implementation on municipally-owned parcels.	July 2015
Begin outreach program to incentivize deployment of rain barrels, disconnection of downspouts that are directly plumbed into the MS4 collection system and, if necessary, consideration of other BMPs to address stormwater runoff at the source.	December 2015
Revised draft Rooftop Runoff Program, if necessary, based on lessons learned during initial implementation period.	July 2016
Quantify and report estimate volume reduction from implemented downspout disconnects and rain barrel deployment.	January 2017

5.4 SPATIAL BMP SEQUENCING FOR EFFECIENT IMPLEMENTATION

The WMMS model is a powerful tool to support BMP implementation. The WMMS was used to support efficient *spatial* BMP sequencing (i.e., watershed areas to prioritize for early implementation actions), based on the cost-effectiveness of implemented control measures subwatershed-by-subwatershed. Through adaptive management the sequencing of BMPs will be refined with additional data provided by the CIMP and other lessons learned. Prescribing sequencing is challenging because BMP implementation over space will also be driven by other factors, including already-scheduled capital improvement projects (e.g., street improvements), public perception issues, and political needs. Continuous simulation and optimization were used to evaluate the pollutant removal effectiveness of the proposed BMPs in each subwatershed. The variables that influence BMP effectiveness include the combination of pollutant generating land uses in the watershed, proximity to receiving waters, imperviousness, and BMP infiltration capacity. The metric that was used to "rank" subwatersheds for each jurisdiction was model-predicted BMP construction cost per pound of pollutant load removed, which can be used as a planning-level approximation of "BMP efficiency". This type of sequencing is intended to promote significant early improvements in water quality.

As shown in **Figure 5-23**, the prioritization process involved grouping the subwatersheds into three tiers for each jurisdiction:

- **Tier 1:** Represents the watershed runoff volumes necessary to meet the 35 percent interim milestone in 2020, based on the highest-ranked subwatersheds
- **Tier 2:** Represents the watershed runoff volumes necessary to meet the 65 percent interim milestone in 2023, based on the next highest-ranked subwatersheds

[5] Control Measures for Attainment of 10% Milestone will be implemented by each Group Member.

- **Tier 3:** Represents the watershed runoff volumes necessary to meet the 100 percent interim milestone in 2026, based on the lowest-ranked subwatersheds.

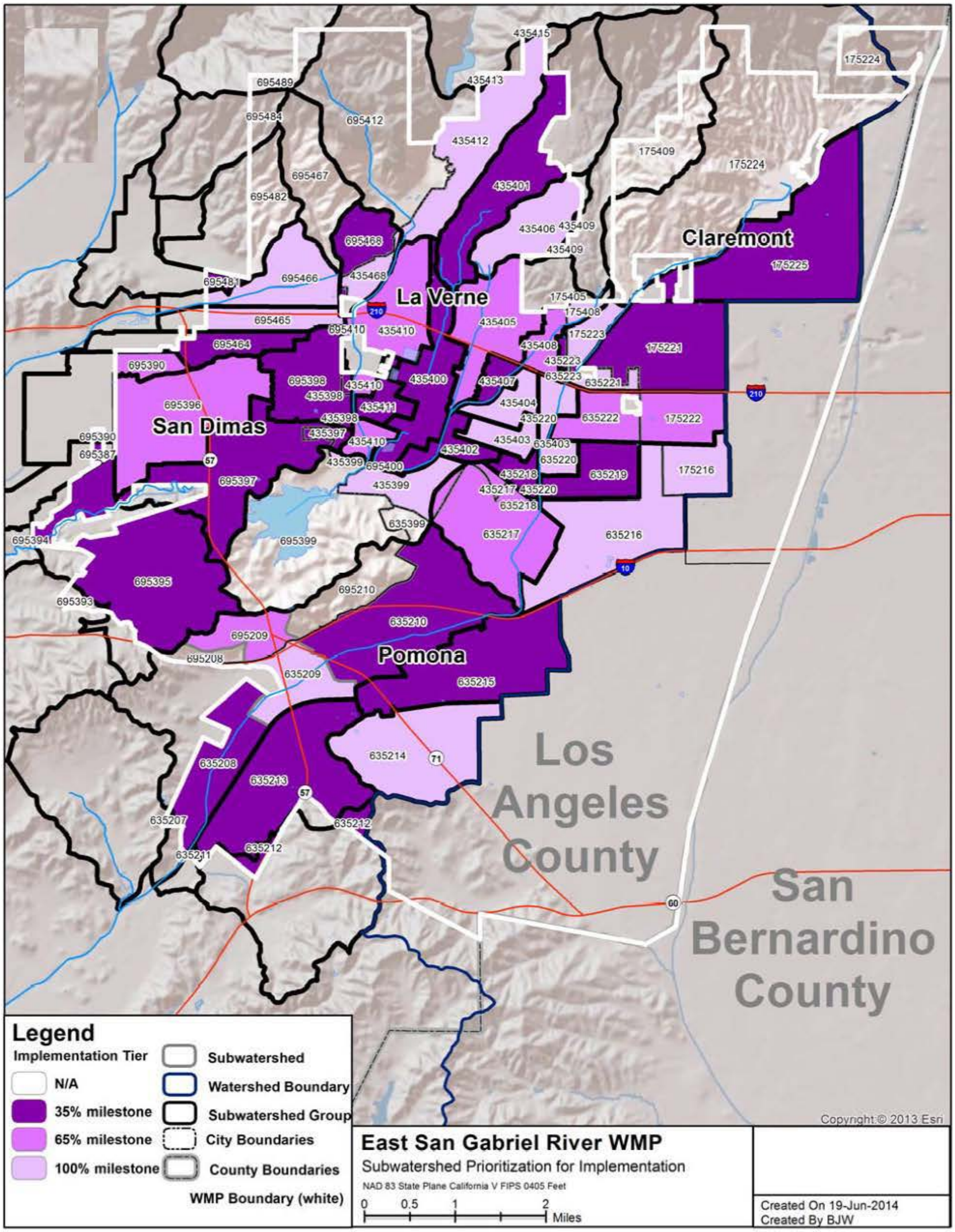
These tiers were developed to help individual jurisdictions focus on areas with the highest likelihood of BMP performance success. Detailed maps and tables of each subwatershed for individual jurisdictions are provided in **Appendix B**. It should be noted that watersheds with runoff that largely originated from open space were excluded from the efficiency analysis and are labeled as “N/A” on these maps and tables, as BMP implementation for open space runoff is not a goal of this WMP.

Although this efficiency analysis provides a planning-level framework to guide implementation to meet the Permit deadlines, a more detailed retention strategy will be necessary for each jurisdiction to successfully manage and document the WMP implementation process. A comprehensive retention plan might include the following elements:

- Standard BMP design templates and/or guidance
- Detailed identification of high priority areas (i.e., cross streets) for green street retrofits
- Detailed evaluation of public parcels available for regional BMPs implementation
- Process for linking BMP retrofits to planned capital improvement projects
- Tracking tools for BMP locations, size, type, and drainage area

Ultimately, by tracking the progress of the program, adaptive management strategies can be employed to refine the assumptions of this analysis and hopefully be used to streamline the implementation process and reduce the overall burden of compliance.

Figure 5-23
Prioritization of BMP Implementation by Subwatershed



6 Implementation Process

The WMP describes the level and types of BMP implementation that will result in attainment of the RWLs and WQBELs of the Permit. The 85th percentile, 24-hour "design storm" volume was used by the RAA to calculate the necessary BMP capacities in each subwatershed in the WMP area. The design storm analysis provides an integrated approach to address all pollutants and all TMDLs regulated by the Permit. Based on this analysis, the networks of BMPs needed to attain the RWLs and WQBELs is extensive. Even if all available and suitable ROWs in the WMP area are retrofitted with bioretention / green streets, that capacity is insufficient to meet the design storm targets. The additional BMP capacity would be achieved with BMPs outside of the ROW (non-ROW BMPs), with options including both regional BMPs (infiltration basins) and distributed BMPs (green infrastructure on private parcels through the LID ordinances, green infrastructure on public parcels, downspout disconnection programs, etc.). The WMP describes how the BMPs may be implemented spatially in a more cost-effective manner to achieve the largest improvements in water quality as early as possible in the implementation schedule (i.e., which subwatersheds should be targeted first).

Over the course of WMP implementation, and through BMP pilot programs, many lessons will be learned and used to increase the efficiency of the BMP implementation effort. Through adaptive management, it may be possible to achieve the RWLs and WQBELs of the Permit with BMP networks that are not as extensive as prescribed in this WMP.

An early step for WMP implementation is the evaluation of city-wide stormwater retention strategies that identify standard BMP designs, select capital improvement projects that may be coupled to stormwater retrofits and target specific parcels and neighborhoods for BMP implementation.

6.1 ESTIMATED COST OF IMPLEMENTATION

The level of effort and funding needed to implement the BMPs identified in this WMP will represent a monumental challenge in stormwater management by the Group. Throughout the Los Angeles region, communities will need to support funding measures for stormwater capital improvements. The projected levels of expenditure to implement the WMP represent factor of 20 fold increases in annual budgets for stormwater management. Additional funding sources will be needed to maintain required budget levels now and decades into the future. Without widespread political and public support, these budget increases will not be possible.

The Cities of Claremont, La Verne, Pomona, and San Dimas plan to work closely with the Regional Board staff to identify the best course of action for achieving successes early in the WMP schedule and starting the process on a positive note. This WMP may provide the technical information needed to motivate regulatory efforts to increase the practicability of the stormwater regulations, including extensions to TMDL implementation schedules and amendments to applicable water quality standards.

An order-of-magnitude cost estimate was developed, based on required capacity to achieve full compliance through implementation of structural and non-structural BMPs. The order-of-magnitude cost estimate for implementation of the WMP is shown in **Table 6-1**. It is important to note that these estimates are provided as order-of-magnitude cost estimates for planning level purposes. Actual expenditures will vary depending on the nature of implementation of the WMP.

6.1.1 Assumptions for Cost Estimate

For planning purposes, cost estimates for implementation of control measures within the WMP area have been developed. There are a variety factors that cause uncertainty in these cost estimates, including:

- The paucity of existing water quality monitoring data in the WMP area, the extent to which control measures will need to be implemented for permit compliance is uncertain.
- Site-specific information on costs of various control measures is not available. Costs have been estimated based on projects in other areas.
- Information regarding long-term operation and maintenance costs of various control measures is sparse.

Cost estimates provided herein will be updated during the adaptive management process as more information becomes available. Notwithstanding the uncertainties listed above, the cost estimates presented here are considered to be accurate on an order of magnitude scale, based on assumptions described below:

1. The low estimate assumes regional BMPs on public land only and a suite of lower cost LID BMPs. The high estimate assumes land acquisition is required to construct regional BMPs and a suite of higher cost LID BMPs.
2. The cost of administering a downspout disconnection program is based on data provided by the City of Portland's Downspout Disconnection Program website (Portland, 2014). The cost estimate of the program used a $53 per household rebate. The estimate uses an assumption of 10% of all households in the ESGV Group Cities to participate in the program over the next 5 years.
3. The cost estimate to administer a LID Ordinance of New/Redevelopment is based on reported "development planning" costs from the ESGV Group's 2012 Annual Reports (Attachment U-4).
4. Regional BMP cost estimates are based on planning-level cost estimates provided in the 2010 "Multi-Pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed" (Los Angeles, 2010). Actual costs of regional BMPs will vary depending of number of BMPs constructed, cost of land acquisition, BMP type, and constructability factors.
5. The estimated costs of LID on public parcels are based on data provided from The Journal for Surface Water Quality Professionals (Grey, 2013).

Table 6-1
Order-of-Magnitude Cost Estimate of WMP Implementation

Low Estimate

Implementation Activity	Estimated Cumulative Expenditure by WMP Milestone 2017 (10% milestone)	2020 (35% milestone)	2023 (65% milestone)	2026 (100% milestone)
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$88,000,000**	**$163,400,000**	**$251,400,000**
Regional BMPs	$ -	$36,300,000	$67,300,000	$103,600,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$6,800,000	$12,600,000	$19,400,000
Total	**$25,091,000**	**$138,553,000**	**$239,246,000**	**$352,579,000**

High Estimate

Implementation Activity	Estimated Cumulative Expenditure by WMP Milestone 2017 (10% milestone)	2020 (35% milestone)	2023 (65% milestone)	2026 (100% milestone)
Administrative Costs - Total	**$24,000,000**	**$48,130,000**	**$72,280,000**	**$96,470,000**
Program Management	$1,650,000	$3,300,000	$4,950,000	$6,600,000
Minimum Control Measures	$22,270,000	$44,540,000	$66,800,000	$89,070,000
Downspout Disconnection Program (Administrative Cost)	$50,000	$180,000	$330,000	$500,000
LID Ordinance of New/Redevelopment (Administrative Cost)	$30,000	$110,000	$200,000	$300,000
CIMP Monitoring - Total	**$1,091,000**	**$2,423,000**	**$3,566,000**	**$4,709,000**
Structural BMPs - Total	**$ -**	**$190,800,000**	**$354,500,000**	**$545,300,000**
Regional BMPs	$ -	$116,300,000	$216,000,000	$332,300,000
Right-of-Way BMPs	$ -	$44,900,000	$83,500,000	$128,400,000
LID on Public Parcels	$ -	$29,600,000	$55,000,000	$84,600,000
Total	**$25,091,000**	**$241,353,000**	**$430,346,000**	**$646,479,000**

6.2 ADAPTIVE MANAGEMENT PROCESS

As new program elements are implemented and information is gathered over time, the WMP will undergo modifications to reflect the most current understanding of the watershed and present a sound approach to address changing conditions. The adaptive management process includes a re-evaluation of water quality priorities, an updated source assessment, an effectiveness assessment of watershed control measures, and a RAA. The CIMP will gather additional data on receiving water conditions and stormwater/non-stormwater quality to inform these analyses. This process will be repeated every two years as part of the adaptive management process.

6.2.1 Re-characterization of Water Quality Priorities

Water quality within the WMP area will be re-characterized using data collected as a result of the CIMP implementation to include the most recent data available. WBPCs may be updated as a result of changing water quality. These classifications will be important for refocusing improvement efforts and informing the selection of future watershed control measures.

6.2.2 Source Assessment Re-evaluation

The assessment of possible sources of water quality constituents will be re-evaluated based on new information from the CIMP implementation efforts. The identification of non-MS4 and MS4 pollutant sources is an essential component of the WMP because it determines whether the source can be controlled by watershed control measures. As further monitoring is conducted and potential sources are better understood, the assessment becomes more accurate and informed.

6.2.3 Effectiveness Assessment of Watershed Control Measures

The evaluation of BMP effectiveness is an important part of the adaptive management process and the overall WMP. Implementation of the CIMP can provide a quantitative assessment of structural BMP effectiveness as it relates to actual pollutant load reduction to determine how selected BMPs have performed at addressing established water quality priorities. In addition, the adaptive management process is a required step for the customization of MCMs as detailed in Section 4. Effectiveness assessment becomes important for the selection of future control measures to be considered.

6.2.4 Update of Reasonable Assurance Analysis

The data gathered as a result of the CIMP will support adaptive management at multiple levels, including (1) generating data not previously available to support model updates and (2) tracking improvements in water quality over the course of WMP implementation. As described in Section 5, the RAA is an iterative process that depends on the continuous refinement and calibration of the watershed models used.

6.3 REPORTING

Annual reporting will be completed each year as part of the CIMP. In additional to assessing the overall progress of the WMP, the CIMP reporting will detail the implemented BMPs and demonstrate the cumulative BMP capacities achieve the interim targets. Data obtained through CIMP monitoring will be used to determine the overall effectiveness of the WMP and will the next phases of WMP implementation during the adaptive management process.

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Appendix A

Details on BMP Modeling for Retention of the Design Storm Runoff Volumes

A-1 BMP Capacities to Retain the 85th Percentile Storm

The required design storm retention volumes for each subwatershed were calculated using the WMMS model. This appendix provides details on the modeling approach to quantify the volume reductions by BMPs included in the initial WMP implementation scenario.

A-2 Data Used

To evaluate BMP opportunities and available implementation areas, several key data sets were processed and formatted. **Table 0-1** outlines the data set names, formats, descriptions, and sources.

Table 0-1
Summary of Data

Data Set	Format	Description	Source
Parcels	GIS Shapefile	Outlines property boundaries and sizes	Los Angeles County (LAC) Assessor
Roads	GIS Shapefile	Shows street centerline network & classification by Topologically Integrated Geographic Encoding and Referencing (TIGER)	LAC GIS Portal
Land Use	GIS Shapefile	Subdivides the region into predefined land use categories with similar runoff properties. Each individual land use feature identifies the associated percent impervious coverage.	LAC WMMS Model
Subwatersheds	GIS Shapefile	Defines drainage areas to selected outlet points	LAC WMMS Model
Slopes	GIS Shapefile	Classifies regions by the slope category	LAC WMMS Model
Soils	GIS Shapefile	Outlines spatial extents of dominant soil types	LAC GIS Portal
Jurisdictions	GIS Shapefile	Establishes city and county boundaries	LAC GIS Portal
Drainage Network	GIS Shapefile	Identifies stormwater structure layout and conveyance methods	LAC GIS Portal
Groundwater Contours	GIS Shapefile	Illustrates groundwater depth as measured from the surface	LAC BOS
Soil Runoff Coefficient Curves	PDF File	Curves characterize effect of rainfall intensity on runoff coefficient per soil type	Hydrology Manual Appendix C (LADPW 2006)
Aerial Imagery	Layer File	Orthoimage of entire region	ESRI Maps & Data Imagery
Runoff Rates	Time Series	Hourly runoff for land uses for the design storm distribution and continuous simulation	LAC WMMS Model

A-3 NON-MS4 FACILITY RUNOFF

Each jurisdiction in the Group's WMP area is subject to stormwater runoff from non-MS4 facilities. In particular, Caltrans roads and facilities regulated by nontraditional or general industrial permits contribute to the design storm volume for each subwatershed. It will be important for these entities to retain their runoff and/or eliminate their cause/contribution to receiving water exceedances. The runoff from these non-MS4 facilities was therefore estimated and subtracted from the 85th percentile design storm volume target, as described below.

A-3.1 NON-MS4 PERMITTED AREAS

Non-MS4 permitted areas were identified based on the address list of permittees on the State Water Resources Control Board (SWRCB) website. Using the address information, corresponding parcel areas were selected using the LA County Assessor Parcel Viewer and the associated GIS Shapefile. The percentage of permitted land use area relative to the total land use area was calculated and the associated non-MS4 permitted area runoff as extracted from the WMMS runoff response output.

A-3.2 CALTRANS

The design storm runoff generated by Caltrans facilities was estimated using WMMS land use data. Areas labeled as Transportation consist of freeways and other extensive transportation facilities that tend to fall under Caltrans jurisdiction (versus areas labeled as Secondary Roads, which are managed by local transportation departments); these areas were assumed to be Caltrans facilities. Runoff from Transportation land uses, less runoff from any overlapping non-MS4 permitted areas identified above, was extracted from the WMMS model output for each subwatershed.

A-3.3 SUMMARY OF NON-MS4 FACILITY RUNOFF

Runoff volumes estimated for non-MS4 permitted areas and Caltrans were subtracted from the design storm volume to generate the required MS4 treatment capacity in **Table 0-2**.

Table 0-2
Design Storm Volume from Non-MS4 Facilities

Jurisdiction	Total Design Storm Runoff, ac-ft	Estimated Design Storm Runoff Volume from non-MS4 Permitted Facilities, ac-ft	Estimated Design Storm Runoff Volume from Caltrans, ac-ft	Required MS4 Treatment Capacity, ac-ft
Claremont	89.5	0.0	4.3	85.2
La Verne	157.5	26.0	4.6	126.9
Pomona	273.6	41.0	27.6	204.9
San Dimas	144.5	1.6	16.0	126.9
Total	**665.1**	**68.7**	**52.6**	**543.9**

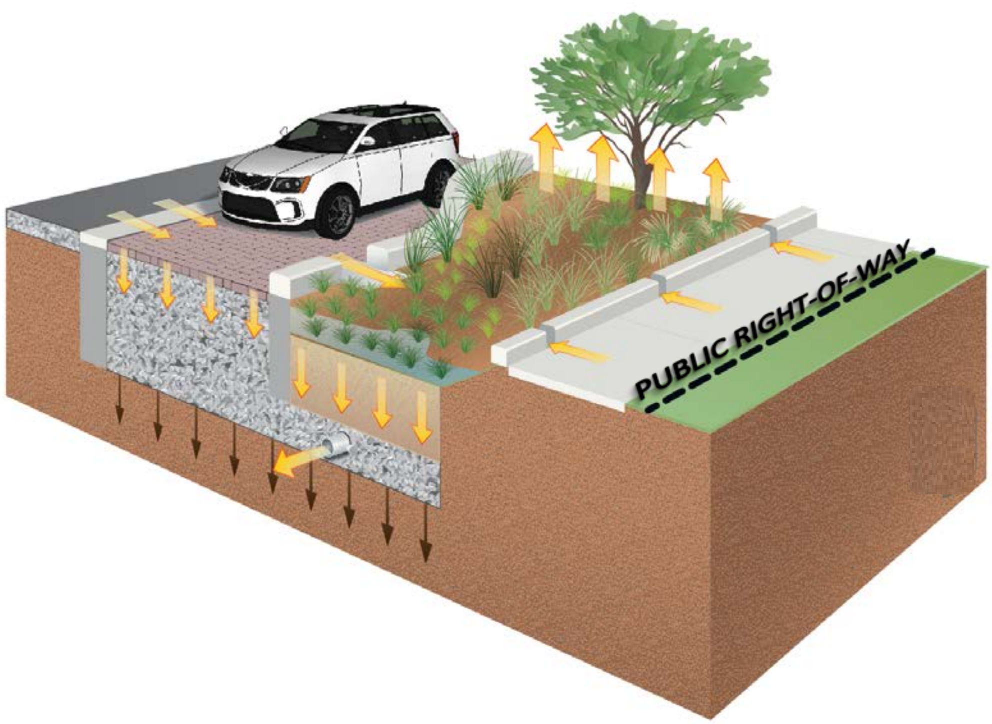
A-3.4 RIGHT-OF-WAY BMP CAPACITY ANALYSIS

In order to highlight the potential structural BMP implementation approaches to retain the 85th percentile storm volumes, a BMP opportunity analysis was conducted. In this section, the right-

of-ways were evaluated for opportunities to locate BMPs. The BMP opportunity analysis described in this subsection evaluates the key components that affect the ability of ROW BMP networks to be effective: space available in the ROW, types of BMPs to site in the ROW, drainage areas that could potentially be treated by ROW BMPs, and estimated BMP infiltration rates.

Stormwater BMPs in the ROW are treatment systems arranged linearly within the street ROW and are designed to reduce runoff volumes and improve runoff water quality from the roadway and adjacent parcels. Implementing BMPs in the ROW provides an opportunity to meet water quality goals by locating BMPs in areas owned or controlled by a municipality to avoid the cost of land acquisition or establishing an easement. Implementing BMPs in the ROW allows for direct control of construction, maintenance, and monitoring activities by the responsible jurisdiction. Bioretention and permeable pavement are typically best suited for implementation in the ROW (**Figure 0-1**).

Figure 0-1
Conceptual schematic of ROW BMPs with an underdrain (Arrows indicate water path ways)



Not all roads are suited for ROW BMP retrofits; therefore, screening is required to eliminate roads where ROW BMP retrofits are impractical or infeasible due to physical constraints. While ROW BMP retrofits can be implemented in a variety of settings, the physical characteristics of the road itself such as the road type, local topography, and depth to groundwater can significantly influence the practicality of designing and constructing these features. A screening protocol was established to identify realistic opportunities for retrofits based on the best available GIS data. The opportunities identified during this process provide the foundation for the engineering analysis to determine the volume of stormwater that can be treated by ROW BMP

retrofits in the subject watersheds. This section describes the data and the screening process used to identify the best available roads for ROW BMP retrofits.

A-3.4.1 ROW BMP Screening

High traffic volumes, speed limits, slopes, and groundwater tables, impact the feasibility of ROW BMP implementation. Road classification data contains information typically useful for determining if the street is subject to high traffic volumes and speeds, and Census TIGER road data provides the best available road classification information for the study area. **Table 0-3** shows the Master Address File (MAF)/TIGER Feature Classification Codes (MTFCC) deemed appropriate for ROW BMP retrofit opportunities. Only roads with the MTFCCs listed in **Table 0-3** can be considered for ROW BMP retrofits in this screening analysis. All other roads are screened out.

Table 0-3
ROW BMP MTFCC

MTFCC	Description
S1400	Local neighborhood road, rural road, city street
S1730	Alley
S1780	Parking lot road

In addition to the screening of road types, opportunities were further screened to remove segments that have steep slopes. BMP implementation on streets with grades greater than 10 percent present engineering challenges that substantially reduce the cost effectiveness of the retrofit opportunity. From the available slope information, roads were considered as retrofit opportunities if the slope was less than 10 percent.

The final screen applied to the roads is the depth to groundwater. Implementing ROW BMPs in areas where the groundwater table is high is not recommended due to the fact that the BMPs are rendered ineffective due to their storage capacity being seriously diminished with groundwater inflow. From the groundwater contours provided, roads were eliminated as opportunities if the depth to groundwater was less than 10 feet. Appendix B, Figure B-1 highlights the areas identified with groundwater depths of 10 feet or less. The highlighted areas provide a starting point for elimination, however it should be noted that further evaluation may be necessary based on local knowledge of areas with high groundwater tables or daylighting of perched groundwater layers as identified by the jurisdictions.

The results of the ROW BMP screening are presented in Appendix B. Appendix B shows the roads available for retrofit (highlighted in green) versus all of the roads within the study area. An overall watershed map and individual jurisdictional maps for each watershed show all the identified retrofit opportunities. The maps indicate that a majority of the roads within each jurisdiction pass through the screening as potential retrofits. It should be noted that due to the coarse nature of the road classification data, only freeways, highways, and major roads were eliminated in the classification screening process. In practice, retrofitting every street that passed through the screening will likely not be feasible and adaptive management strategies will be

necessary in the future to further refine the road classification data layer to more accurately identify road types suitable for ROW BMP retrofits.

The screened opportunities were used as the basis to evaluate the potential runoff volume reduction provided by ROW BMP implementations. In the following section, an engineering assessment is presented that determines the ROW BMP contributing drainage areas and the overall volume reductions achieved through ROW BMP implementation.

A-3.4.2 ROW BMP Configuration

The three most important assumptions necessary to evaluate BMP volume reduction performance are (1) the physical BMP configuration assumptions, (2) the contributing drainage area characteristics, and (3) the in-situ soil infiltration rates. By understanding the area draining to the BMPs and the volume capacity and function of the BMPs, an assessment can be performed to evaluate the potential of ROW retrofit BMPs to capture the required runoff volume in each subwatershed. This section summarizes the information and processes used to establish BMP configuration assumptions to be used for the runoff analysis presented in the following section.

A-3.4.3 BMP Assumptions Based on Green Streets

ROW BMPs consists of multiple types and combinations of stormwater treatment options. A well-established and often utilized ROW BMP is green streets. Green streets provide multiple benefits for pollutant and volume reduction and have been implemented in locations throughout the nation In the future and as updates are made to the WMP, other ROW BMPs may be incorporated to achieve the required volume reductions.

Green streets typically consist of bioretention areas between the curb and sidewalk (herein referred to as the parkway) and/or permeable pavement within the parking lane. Prior to evaluating green street BMP treatment capacity, it is imperative to establish a configuration that can be assumed for typical implementation watershed-wide. This establishes the parkway space needed for the BMPs (plan view) and also determines the hydraulic function and storage capacity of the subsurface systems.

Bioretention systems are surface and subsurface water filtration systems, which use vegetation and underlying soils to store, filter, and reduce runoff volume while removing pollutants. **Figure 0-2** represents a typical bioretention system incorporated into a green street design. Bioretention systems consist of a ponding depth and engineered soil media depth to treat runoff. **Table 0-4** outlines typical widths, depths, and soil parameters associated with green street bioretention cells. Green streets were assumed to have no underdrains because the WMP emphasizes low impact development and stormwater volume reduction to achieve pollutant load reductions.

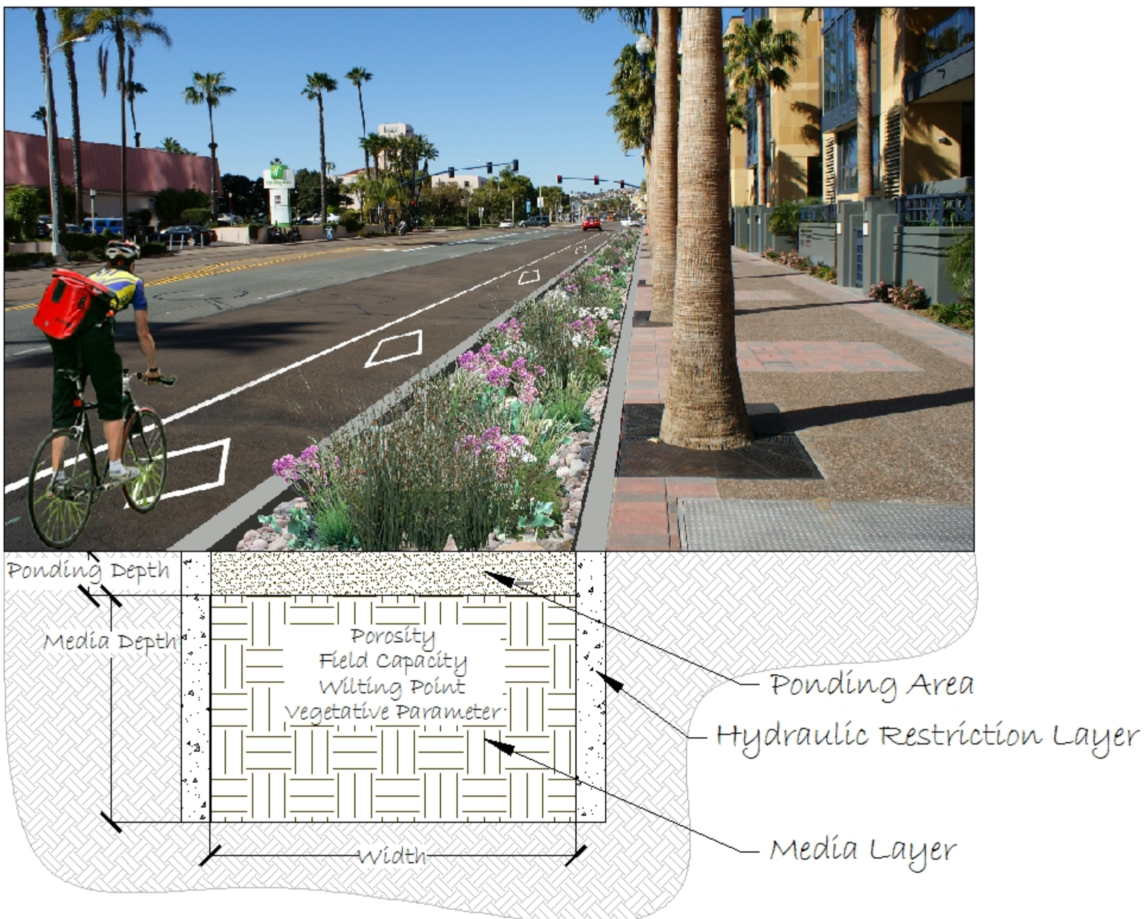
Driveways and utilities limit the road length that can be converted into a green street. From past experience and aerial imagery review in the local watersheds, it was determined that 30 percent of the road length could be considered as the maximum possibility for conversion into bioretention area. This factor was used to limit the total length of potential green street bioretention areas. The parameters outlined above and in the table below were assumed to be the typical green street BMP implementation configuration for the screening analysis and the BMP treatment capacity evaluation described in the next section.

Table 0-4
BMP Design and Modeling Parameters for Subsequent Analyses

Component	Design Parameter	Value
Ponding Area	Depth	0.8 feet
	Width	4.0 feet
Media Layer	Depth	3.0 feet
	Porosity	0.4
Overall Profile	Effective Depth[1]	2.0 feet

[1] Effective depth is the maximum equivalent depth of water stored within the bioretention area less the depth displaced by soil media (vertical summation of surface ponding depth and void storage depth)

Figure 0-2
Typical Bioretention Section View (City of San Diego 2011)

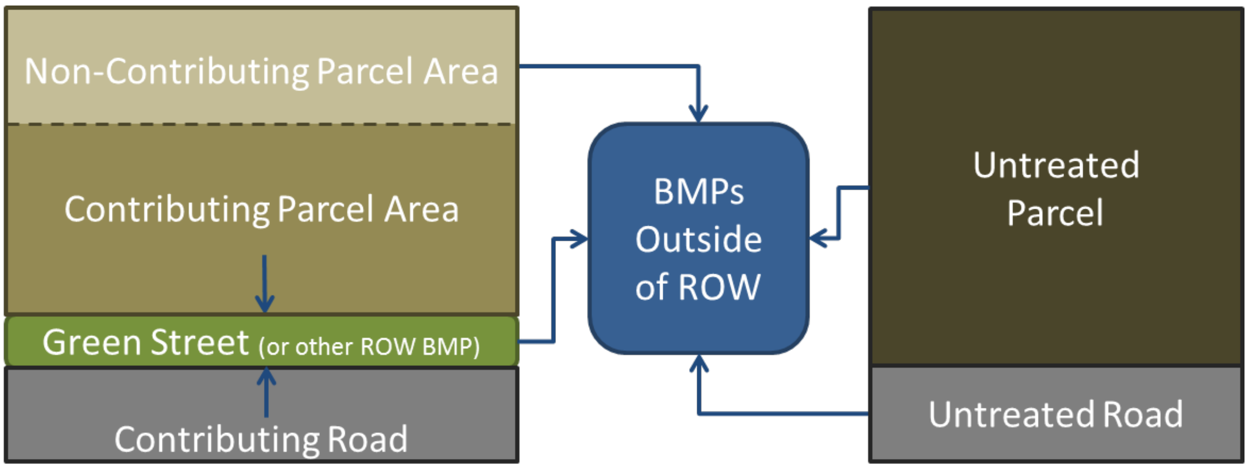


A-3.4.3.1 Contributing Drainage Area Analysis

The purpose of this analysis was to realistically represent the area, type, and impervious coverage of land draining to potential green streets throughout the entire watershed. This is a critical step in WMP development because it predicts what volume of runoff can be assumed treated by green streets and what remaining (untreated) runoff must be routed to regional BMPs

or addressed in other ways. The following engineering analyses were performed at a subwatershed-scale within the limits of available data and resources to estimate the maximum potential green street treatment capacity; given more detailed street-by-street drainage area data, the assumptions and results presented herein could be refined in future efforts to optimize green street treatment capacity. **Figure 0-3** illustrates a simplified routing schematic used to represent the available runoff flow pathways to green street and regional BMPs throughout the watershed. The following subsections explain how each representative drainage area illustrated in **Figure 0-3** was characterized.

Figure 0-3
Green Streets Model Schematic (arrows denote direction of runoff routing; figure not to scale)



A-3.4.3.2 Typical Parcel Size & Street Frontage Analysis

The nature of the green street analysis requires an understanding of typical parcel sizes and how much of the parcel drains to the ROW. Much of the runoff from parcels and the road drains to the ROW and is conveyed downstream through curb, gutter, and pipes. By identifying the typical parcel size, frontage length, and associated road area that drains to a candidate right-of-way area (**Figure 0-4**) the total area draining to potential green street retrofit opportunities was extrapolated throughout the watershed. For purposes of this study, only the high-density residential, multifamily residential, commercial, institutional, and industrial land uses were considered as contributing substantial runoff to the ROW (all other land uses contain minimal impervious area and thus contribute insubstantial runoff to the ROW).

The typical parcel size for each land use was determined by identifying all parcels for each land use. Once all the parcels were selected, the median parcel size for each land use was calculated and tabulated. This method evaluated thousands of parcels throughout the entire watershed and provided the most accurate depiction of the typical parcel size for each land use based on available data. Results are shown in **Table 0-5**.

Each parcel is adjacent to a portion of the ROW where the green street would be implemented. A subset of parcels approximate to the median parcel size for each land use was selected to determine the average frontage length. The portion of the selected parcels that was in contact with the ROW was measured using desktop analysis tools and averaged between all parcels of the same land use. Results are shown in **Table 0-5**.

Road area draining to green streets constitutes a substantial component of the total impervious drainage area. To establish road drainage areas, typical road widths were defined by sampling representative road segments located in each land use. Widths were measured from curb-to-curb using aerial orthoimagery and reported to the nearest even integer. The median sampled road width for each land use was calculated and compared with the City of Los Angeles Standard Street Dimensions (City of Los Angeles Bureau of Engineering 1999) for validation. To predict the resulting contributing road areas, the previously measured frontage length was multiplied by half the road width. Roads were assumed to be crowned; therefore, only half of the width would drain to one side of the road. Results are shown in **Table 0-5**.

As discussed in Section A-3.4.3, only 30 percent of the frontage length could be converted into bioretention area. This factor was multiplied by the frontage length and used in limiting the total length of bioretention available within the model, as presented in **Table 0-5**.

Figure 0-4
Typical Parcel Area, Road Width, Road Area, and Frontage Length Schematic (figure not to scale)

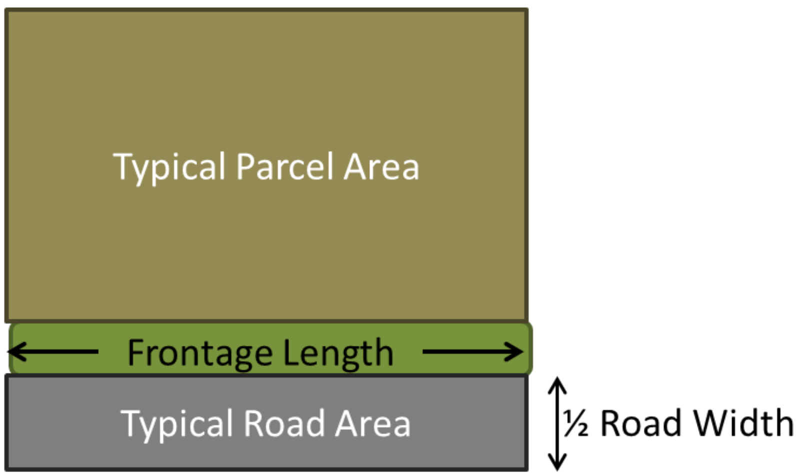


Table 0-5
Typical parcel area, road area, and frontage length

Land Use	Typical Parcel Area, ft^2	Frontage Length, ft	Typical Road Width, ft	Typical Road Area, ft^2	BMP Length, ft
High-density Residential	6,528	57	38	1,083	17
Multifamily Residential	13,526	60	30	900	18
Commercial	12,429	100	63	3,150	30
Institutional	38,215	143	37	2,646	43
Industrial	26,467	117	46	2,691	35
Other Land Use (Open Space, Vacant, etc.)	n/a[1]	100	40	2,000	30

[1] assumed not draining to ROW

A-3.4.3.3 Contributing Parcel Area Analysis

Many parcels will not always entirely drain to the ROW because portions can be retained on-site or flow onto an adjacent property. The actual volume of water that can be treated by a green street BMP was determined by identifying the typical proportion of the parcel that drains to the ROW (as shown in context of the model schematic in **Figure 0-5**). This step also determines the area, and associated runoff, that is *not* expected to drain to green streets and is routed directly to downstream regional facilities or other practices (herein referred to as non-contributing parcel area).

The contributing areas to the green street BMPs were found using random sampling and identifying the surrounding parcel drainage patterns. Parcels were selected using a random number generator and drainage areas were determined on a desktop analysis using topography, aerial imagery, and drainage infrastructure features. The average contributing percentage was identified by evaluating multiple sites. **Table 0-6** shows the percent contributing areas by land use that were determined from this analysis.

The impervious coverage of contributing parcel areas was also characterized during this step so that runoff could be simulated and routed to green streets in each land use. This was performed by tabulating the imperviousness data from the WMMS Model for each individual land use feature. The area-weighted mean impervious coverage was then calculated for each land use type. Results are tabulated for each land use in **Table 0-6**.

Figure 0-5
Parcel Contributing Area to ROW (impervious varies by land use; arrows denote direction of runoff routing; figure not to scale)

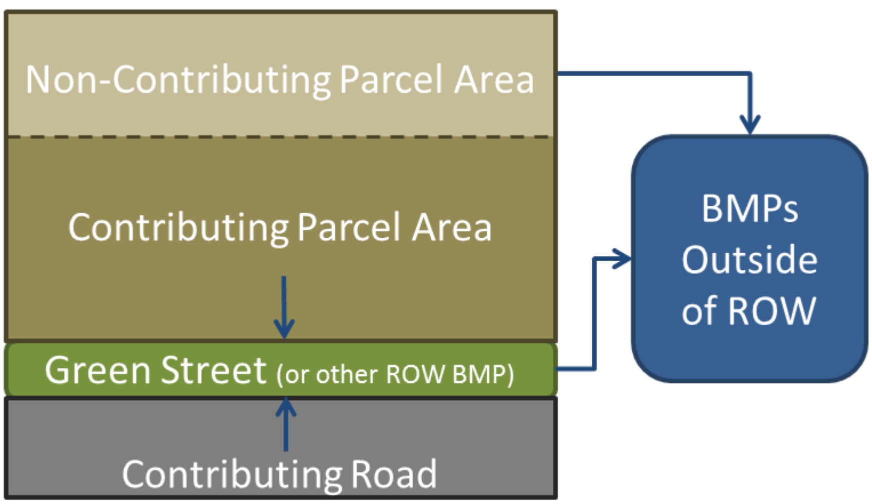


Table 0-6
Contributing area percentage by land use

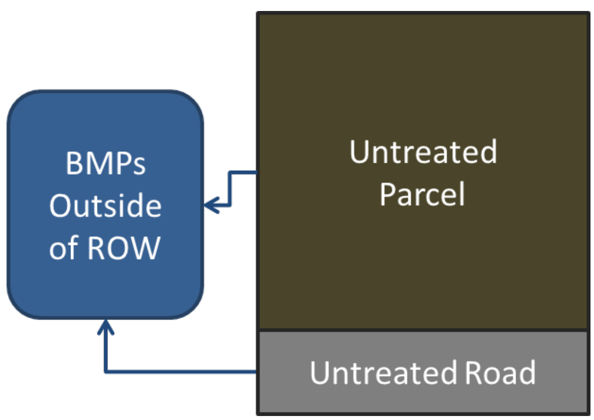
Land Use	Contributing to ROW	Non-contributing to ROW	Percent Impervious
High-density Residential	80%	20%	36%
Multifamily Residential	80%	20%	60%
Commercial	80%	20%	90%
Institutional	80%	20%	72%
Industrial	35%	65%	66%
Other Land Use (Open Space, Vacant, etc.)	0%	100%	n/a

A-3.4.3.4 Untreated Roads Tabulation

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or adjacent to open space or vacant parcels. Untreated road and associated adjacent parcel area that will ultimately drain to other BMPs was tabulated using available GIS data and screening results from Section A-3.4.1 (conceptually illustrated in **Figure 0-6**).

Because green streets are implemented in the linear environment of the transportation corridor, it was assumed that the percentage of parcel area draining to green streets would be proportional to the percentage of suitable roads for green streets (as identified in Section A-3.4.1) in each subwatershed. In other words, parcels associated with unsuitable roads were assumed to bypass green street treatment and routed directly to other facilities (these areas are defined herein as *untreated parcels*). The total treated and untreated parcel areas were reconciled with the total areas of each land use (per subwatershed) in the WMMS Model for validation and consistency.

Figure 0-6
Schematic Depicting Untreated Parcel and Untreated Road Runoff Routing (arrows denote direction of runoff routing; figure not to scale)



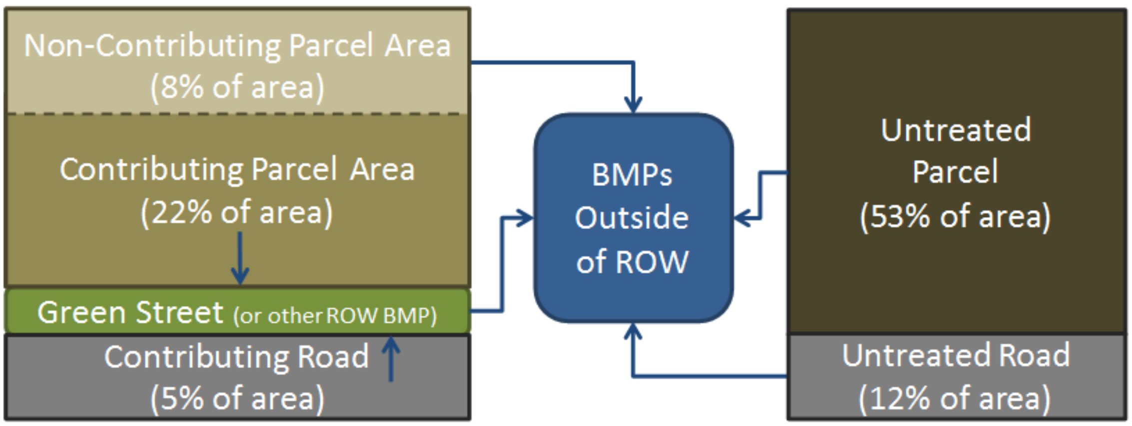
A-3.4.3.5 Summary of Contributing Drainage Areas

Results of the preceding analyses are presented in **Figure 0-7**. Areas that were assumed *un*treated by green streets include unsuitable roads and adjacent parcels, portions of suitable parcels that do not drain to the ROW, and predominantly pervious parcels (Open Space, Vacant, etc.), as discussed in preceding subsections; runoff from these untreated areas is assumed routed

directly to regional facilities. Note that contributing areas are not necessarily proportional to contributing runoff due to variation in impervious coverage; runoff routing resulting from the preceding analyses is presented in the following section.

Given more detailed street-by-street engineering analyses, the potential area treated by green streets could be optimized, but the results below represent realistic estimates based on sound engineering judgment and currently available data and resources. Adaptive management strategies could target specific land uses that tend to bypass green street treatment (e.g. runoff, and associated treatment capacity, generated by industrial areas could be addressed through relevant industrial permits or onsite BMPs). Additional discussion on adaptive management strategies is provided in Section A-4.

Figure 0-7
Schematic Depicting Contributing Area Routing as Percentages of the Total Watershed Area (arrows denote direction of flow; figure not to scale)



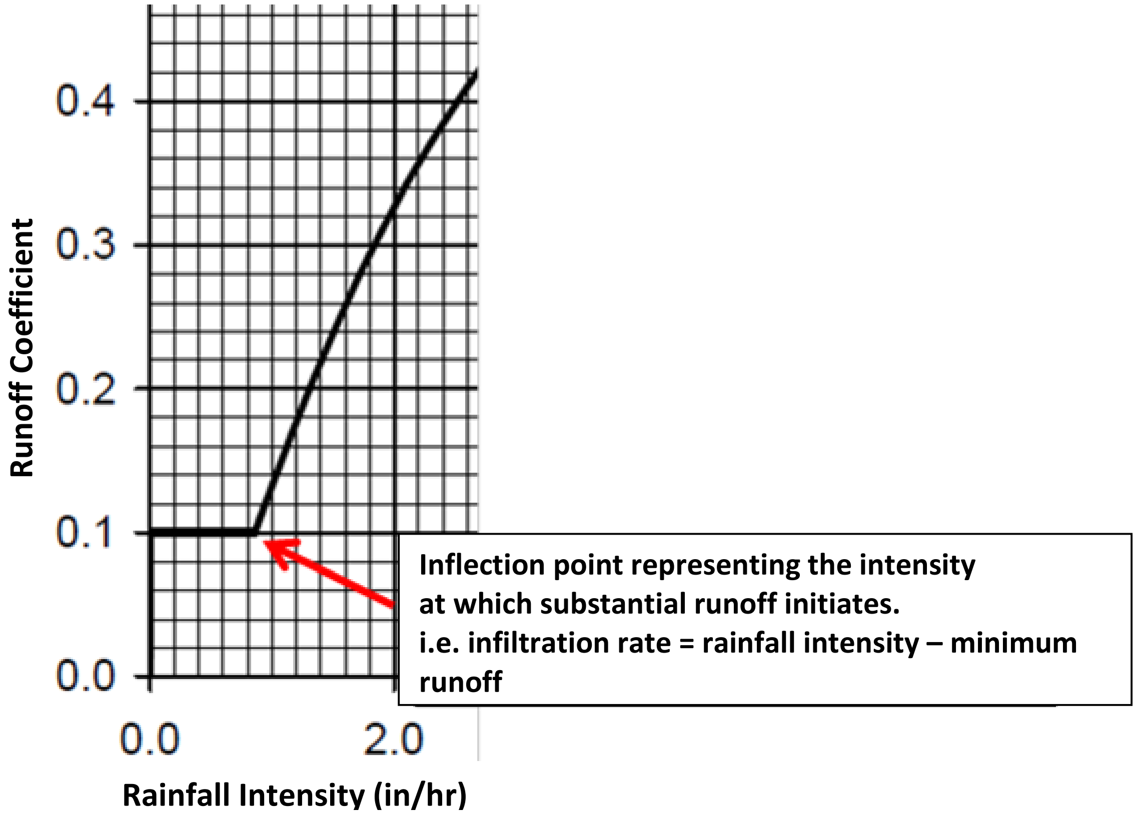
A-3.4.3.6 BMP Infiltration Rates By Subwatershed

The purpose of performing the subwatershed infiltration rate analysis was to assign an average green street BMP infiltration rate to each subwatershed using soils data. Infiltration rates were assigned at the subwatershed level, which is the finest resolution at which the model performs hydrologic and water quality computations.

Soil data coverage provided through the LACDPW categorized soil unit areas into soil types. Runoff coefficient curves reported in the Hydrology Manual were developed by LACDPW for each soil type using double ring infiltrometer tests performed on areas of homogeneous runoff characteristics (LACDPW 2006). LADPW employed a sprinkling-type infiltrometer to perform the tests in each homogeneous area.

Runoff coefficient curves represent the response of the runoff coefficient (defined as the ratio of runoff to rainfall from a land area) to varying rainfall intensities. Each curve displays an inflection point representing the rainfall intensity at which substantial runoff initiates. According to LADPW (2006), each curve was assigned a minimum runoff coefficient of 0.1, “indicating that there is some runoff even at the smallest rainfall intensities.” If it is assumed that substantial runoff initiates when the intensity of rainfall is greater than the soil’s inherent infiltration rate, then the infiltration rate can be assumed equal to the rainfall intensity at the inflection point (less the assumed minimum runoff).

Figure 0-8
Example Determination of Runoff Coefficient Inflection Point for an Arbitrary Soil Type in Appendix C of LACDPW (2006)

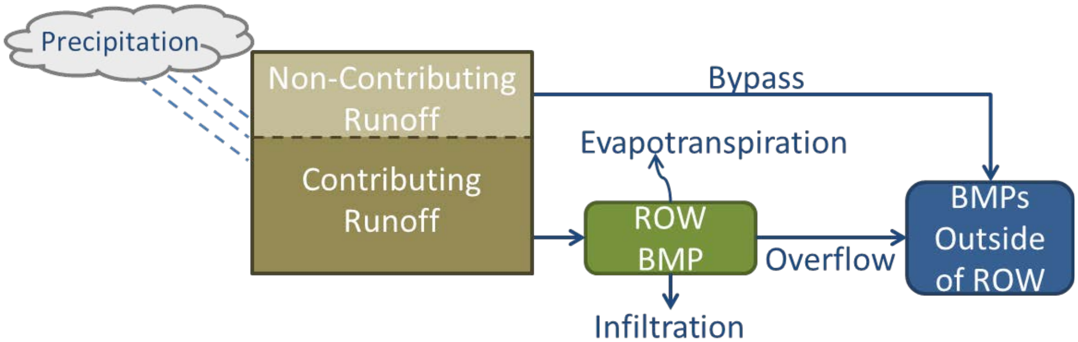


The inflection point, and subsequently calculated infiltration rate, for each unique soil type in the ESGV WMP area were identified using the runoff coefficient curves in Appendix C of the *Hydrology Manual* (LADPW 2006). Subwatershed areas were then intersected with the soil type coverage to calculate an area-weighted infiltration rate. Appendix B shows the distribution of the infiltration rates.

A-3.4.4 Summary of Planning-Level ROW BMP Capacities

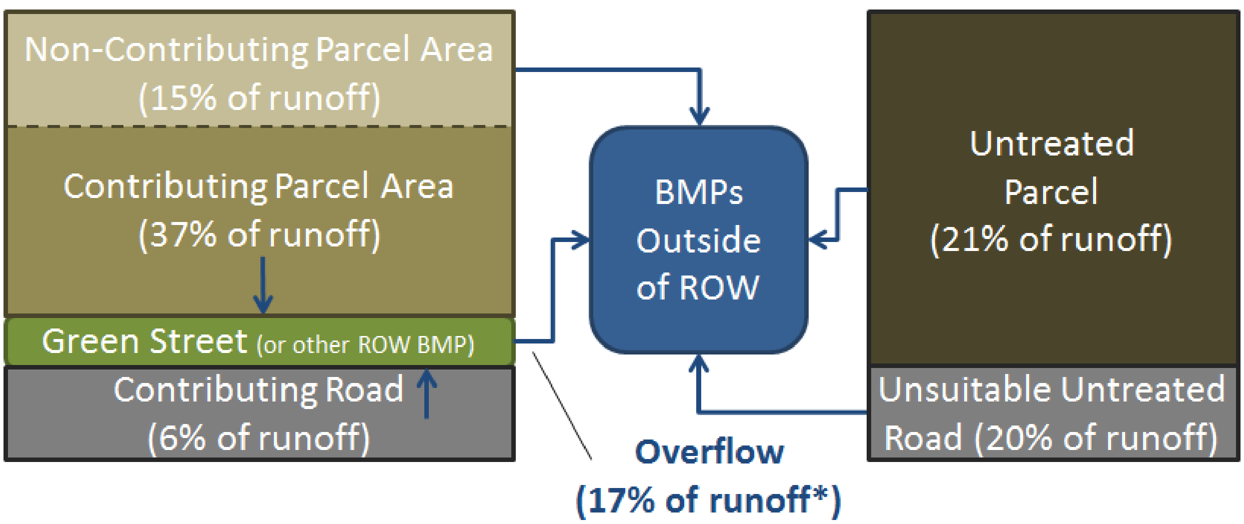
To accurately predict the runoff reduction provided by green streets, BMP models were set up using the BMP tools in WMMS. The contributing drainage area properties, BMP configuration, and infiltration rates for each subwatershed as described in the previous section were used as input into the analysis. The BMP tool in WMMS represents the hydrologic conditions of each subwatershed from runoff to BMP performance to bypass. It is best understood by following the runoff flow path through a typical watershed. Each land use is assigned a runoff time series which is routed to either a BMP or as bypass. The runoff routed to the BMP serves as the inflow and fills up the available ponding depth and the soil media void space. While the storage area fills, the BMP outflows through infiltration and evapotranspiration. Once the storage area is full, the water overflows, which is then routed downstream to another BMP. **Figure 0-9** shows the simple BMP runoff flow paths.

Figure 0-9
Green Streets Runoff Routing Model Schematic (arrows denote water pathways)



Based on the routing configuration findings outlined in A-3.4.2 and the BMP modeling analysis, up to 43 percent of the watershed runoff drains to the identified green street retrofit locations (with 26 percent being captured by the BMPs and 17 percent overflowing downstream). The remainder of the watershed runoff (57 percent of the total) must be managed through other volume reduction strategies.

Figure 0-10
Summary of Runoff Routing by Area (arrows denote direction of runoff routing; figure not to scale)



*Note: Overflow from green streets is the difference between the contributing parcel and roadway runoff less the green street volume reduction of 26%.

A-3.5 NON-ROW BMP CAPACITY ASSESSMENT

Excess volume that does not drain to the ROW or is unable to be captured by ROW BMPs (due to overflowing) must be retained through non-ROW BMPs. These non-ROW BMPs potentially include the following:

- Low impact development retrofit projects to retain runoff from public parcels (e.g., permeable pavement in parking lots of municipal buildings, bioretention areas or green roofs to prevent runoff from municipal facilities, etc.)
- Retention of runoff from new and redeveloped private parcels subject to LID ordinances.

- Programs on private parcels to promote infiltration or retention of rooftop runoff, including downspout disconnection or rain barrel incentive programs.
- Regional BMPs to capture and retain runoff from large upstream areas prior to discharge to receiving waters.

The following non-ROW BMP capacity assessment was performed as a planning-level exercise to help guide strategies for retaining the 85th percentile storm volume in each subwatershed. The resulting capacities can be used as a baseline goal for meeting numeric targets, but adaptive management should be used to refine these strategies over time.

A-3.5.1 LID on Public Parcels

Retrofitting public parcels with LID can be an efficient strategy for reducing stormwater runoff. This method allows municipalities the flexibility to prioritize and schedule stormwater projects to coincide with improvements that are already on the books (such as scheduled parking lot resurfacing, utility work, and public park improvements). Implementing LID on public parcels also allows municipalities the freedom to construct, inspect, and maintain BMPs without the need to purchase private property or to create stormwater easements.

The spatial extent of public parcels in each subwatershed was identified by selecting all parcels labeled as public by their assessors identification number (AIN). A total of 7,320 acres of public land was identified during this process (35% of the total WMP area). Runoff generated by each specific public parcel during the 85th-percentile, 24-hour storm was then extracted from the WMMS model output, and the runoff from any Caltrans or permitted non-MS4 land that overlapped public parcels was subtracted to avoid double-counting. The remaining runoff volume represented the maximum potential design storm runoff to be retained on public parcels.

LID retrofits are not feasible in all locations due to steep slopes, soil contamination hazards, and other constrains. The total runoff to be retained on public parcels was therefore discounted by 30% in order to provide a more realistic goal; this estimate was made in the lack of more detailed data, based on past LID screening exercises performed in Los Angeles County. The discount factor should be refined as actual public project sites are screened and prioritized.

A-3.5.2 LID on Private Parcels from (Re)Development

The Permit requires initiation of LID ordinances that require implementation of LID BMPs during new development and redevelopment. LID practices constructed during *new* development will likely have a net zero impact on runoff volumes because predevelopment conditions will theoretically be restored to the site via construction of new BMPs; however, LID incorporated into *re*development projects will reduce existing runoff volumes discharged by the MS4 because existing impervious surfaces will be retrofit with BMPs.

To estimate the impact of redevelopment on meeting the design storm runoff target, redevelopment data were submitted by the jurisdictions. Typical parcel sizes and redevelopment rates (in terms of parcels per year) were evaluated based on at least two years of submitted data to estimate the total private parcel area to be redeveloped (and subsequently retrofit with BMPs) per year. Public parcels were not considered in this analysis because they were previously considered in Section A-3.5.1.

The redevelopment rates were applied regionally to multi-family residential, commercial, and institutional land use areas throughout each subwatershed, and it was assumed that all runoff from the redeveloped area would be retained at the end of the compliance schedule (2026). High-density single-family land uses were not considered because the area threshold that triggers a redevelopment project (5,000 square feet of new/replaced impervious area) would not commonly be surpassed on single family parcels. Industrial land uses were also not considered because these analyses could potentially overlap with areas already regulated under non-MS4 stormwater permits.

Table 0-7
Estimated redevelopment rates reported by jurisdiction

Jurisdiction	Typical Redeveloped Parcel Size (ac)	Mean Land Area Redevelopment Rate (ac/year)
Claremont	1.25	8.125
La Verne	2	2
Pomona	8	90
San Dimas	4.8	4.176

A-3.5.3 Downspout Disconnection Program

Impervious surfaces are considered *directly connected* when runoff is routed to the storm drain system without providing opportunities for infiltration. The rate and volume of runoff entering the MS4 can be reduced by disconnecting impervious surfaces, (such as rooftops with downspouts plumbed to the gutter or storm drain) such that runoff is afforded the chance to be stored, infiltrated, and/or evapotranspired.

To simulate a downspout disconnection program, it was assumed that disconnections would be performed on high-density single-family residential, multi-family residential, and institutional land uses because structures in these land uses tend to be surrounded by open space such as lawns, open space, and playgrounds (vis-à-vis commercial and industrial land uses that tend to have pavement and sidewalks abutting the buildings). Next, it was assumed that 10%, 50%, and 50% of high-density single-family residential, multi-family residential, and institutional land uses are directly connected, respectively. This was a planning-level estimate that was made in the lack of more detailed data and is considered conservative considering many currently disconnected downspouts are in fact routed to driveways, curbside drains, and compacted urban lawns.

Downspout disconnection was simulated by modeling the unit hydrology of downspout disconnection for each combination of considered land use and underlying soil infiltration rate. Only private parcels were considered for this analysis because runoff reduction on public parcels was already considered in Section A-3.5.1. Typical dimensions and drainage area ratios of rooftop to open space for each considered land use were defined using aerial orthoimagery and it was assumed that runoff exiting a disconnected downspout would disperse at a 45˚-angle until encountering the parcel boundary. Depressional storage for open space to which runoff was routed was assumed to be 0.1 inches per ASCE (1992). The unit hydrologic response of

disconnected parcels was then extrapolated for each private parcel - land use – infiltration rate combination within each subwatershed.

As mentioned above, it is important to note that the effective directly connected area eligible for a disconnection program may be much larger than the considered area because many “disconnected” downspouts are routed to driveways or compacted urban lawns. Downspout disconnection programs should offer incentives for property owners who truly disconnect their rooftop by incorporating stormwater harvesting and retention practices such as rain barrels, rain gardens, and/or soil amendments.

A-3.5.4 Summary of Planning-Level Non-ROW BMP Capacities

The following table (**Table 0-8**) summarizes the percent reduction in design storm runoff (excluding non-MS4 runoff) that could potentially be achieved by BMPs outside of the ROW.

Table 0-8
Overall Jurisdictional Requirements to Retain the Design Storm Volume

Jurisdiction	Potential Reduction in MS4 Design Storm Runoff From Non-ROW BMPs, ac-ft (percentage of MS4 treatment capacity)			
	LID on Public Parcels	LID on Private Parcels	Downspout Disconnection	Total per Jurisdiction
Claremont	5.05 (6%)	4.31 (5%)	3.30 (4%)	12.66 (15%)
La Verne	6.91 (5%)	1.08 (1%)	5.35 (4%)	13.34 (11%)
Pomona	17.41 (8%)	29.06 (14%)	6.71 (3%)	53.18 (26%)
San Dimas	8.44 (7%)	1.78 (1%)	4.50 (4%)	14.72 (12%)
Total per BMP (ESGV-wide)	**37.82 (7%)**	**36.23 (7%)**	**19.86 (4%)**	**Grand Total = 93.91 (17%)**

A-4 ADAPTIVE MANAGEMENT STRATEGY FOR ACHIEVING BMP CAPACITIES

Expansive networks of BMPs that will be required to retain the design storm volumes for each jurisdiction. As BMPs are implemented, the experience gained can and should be used to improve the reduction strategy approach and associated analyses. This section summarizes potential methods to either [1] increase the effectiveness/capacity of ROW BMPs or [2] reduce the total runoff that is not retained by ROW BMPs.

A-4.1 OVERFLOW FROM ROW BMPS

The RAA highlighted only bioretention as a BMP option for green streets. Permeable pavement could also be implemented within the ROW to increase the storage capacity and reduce the BMP overflow. Preliminary findings indicate that inclusion of permeable pavement with all modeled green street opportunities could result in full retention of the design storm runoff from the contributing areas, which would eliminate green street overflows and increase the total green street reduction from 37 percent to 52 percent.

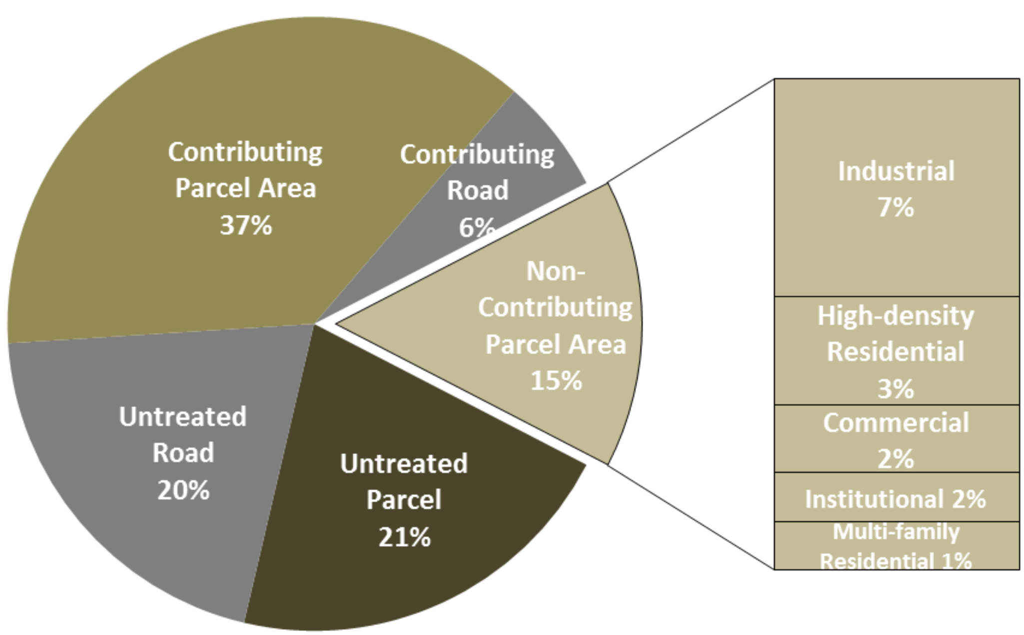
In the course of the RAA, the available area for ROW BMP implementation was limited to 30 percent of the road length (see Section A-3.4.3). This assumption limits the area for implementation and results in overflow when green streets reach their maximum capacity. To limit the overflow, the maximum extent of ROW BMP implementation along streets could be increased; however, this percentage should only be adjusted on a street-by-street basis upon more detailed investigation of the watershed.

A-4.2 PARCEL AREAS THAT DO NOT DRAIN TO ROW WHERE ROW BMPS ARE SUITABLE

As described in Section A-3.4.3, many parcels include areas that do not contribute runoff to adjacent streets that are candidates for green street retrofits. Based on the current assumptions, approximately 15 percent of the excess runoff comes from the non-contributing parcel area (**Figure 0-11**). To decrease this excess runoff, the assumed contributing percentages can be adjusted based on a deeper understanding of the watershed and local observations.

Typical industrial and large commercial parcels include on-site collection systems that are directly connected to the storm sewer system and thus bypass any opportunity for treatment through green streets. Programs may be possible to promote on-site capture of commercial/industrial stormwater runoff that would reduce the overall runoff and decrease the total volume required for treatment with regional BMPs. For example, a low-impact development retrofit program that targeted the directly connected areas of industrial parcels might be one way to address the 7 percent of untreated runoff generated from this land use (**Figure 0-11**).

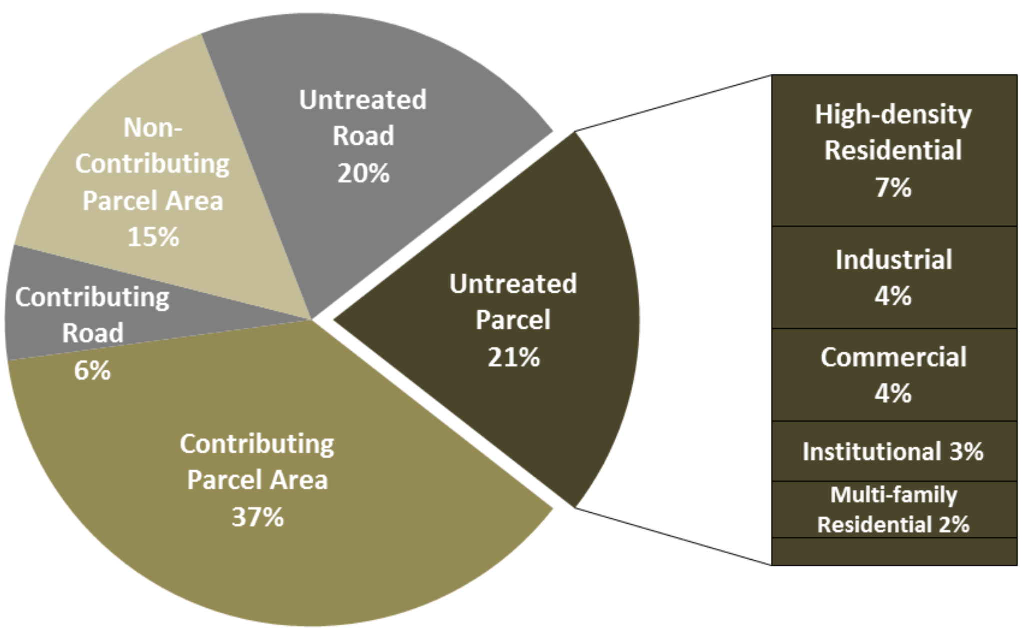
Figure 0-11
Runoff Distribution and Routing Emphasizing Runoff from Areas that do not Drain to the ROW



A-4.3 UNTREATED PARCELS

The majority of land area (53 percent) analyzed in this study were classified as "untreated parcels" (**Figure 0-7**). Untreated parcels include open space and parcels that are adjacent to roads deemed unsuitable for green street retrofit (see Section A-3.4.3). While open space comprises much of the land in this area, the runoff generated from open space parcels during the design storm scenario is small compared to urbanized areas. The majority of the untreated runoff is generated from the developed parcels that drain to roads deemed unsuitable for green street retrofits (**Figure 0-12**). Since this area contributes 21 percent of all runoff for the design storm, it is likely that non-ROW capture strategies will need to be considered. Similar to the example provided under Non-Draining Parcel Area subheading above, low-impact development retrofit incentive programs could be explored as non-ROW BMPs (however, it should be noted that low-impact development may be difficult in some of these areas because unsuitable roads were often eliminated due to high slopes). Other non-ROW BMPs that may also be considered includes regional BMPs.

Figure 0-12
Runoff Distribution and Routing Emphasizing Runoff from Untreated Parcels



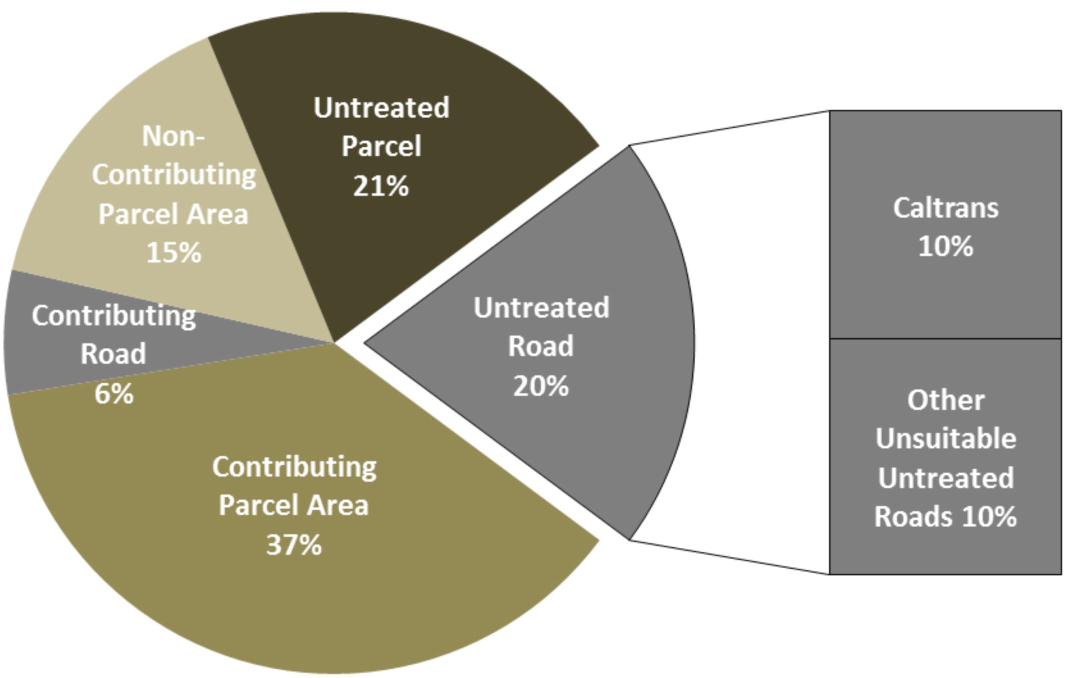
A-4.4 UNTREATED ROADS

Untreated roads consist of roadways with steep slopes, classifications not suited for green street implementation, or open space or vacant parcels adjacent. The majority of the roads identified were freeways and highways. The freeways and highways contribute 10 percent of the total runoff to the storm sewer system (**Figure 0-13**). As discussed in Section A-3, the excess runoff

from freeways and highways fall under the jurisdiction of Caltrans and are not under the charge of the MS4.

Other unsuitable, untreatable roads contribute 10 percent of the total runoff. Other unsuitable, untreatable roads with appropriate slopes can implement green streets to solely treat *roadway* runoff in situations where the adjacent parcels are expected to contribute insignificant runoff or where runoff is conveyed away from the ROW. For instance, green streets sited along predominantly pervious parcels (those classified as Open Space, Vacant, etc.) would primarily capture and treat runoff only from the road surface. This procedure can identify the additional potential road drainage area that can be treated through ROW BMPs.

Figure 0-13
Runoff Distribution and Routing Emphasizing Runoff from Untreated Roads



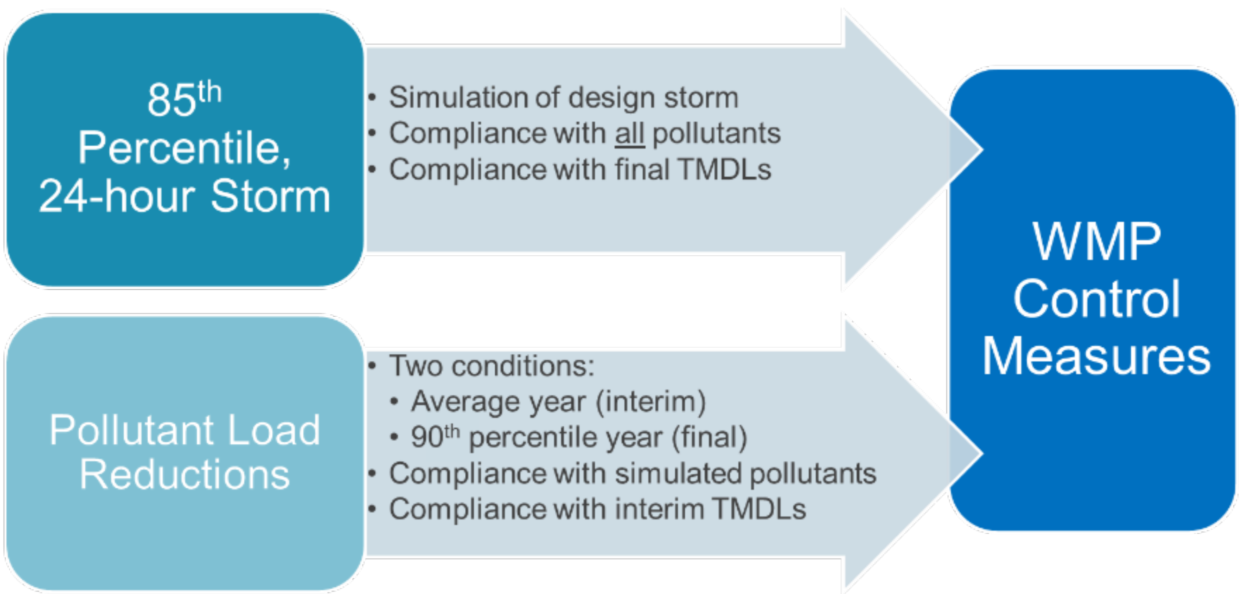
A-5 Comparison of Volume-Based (Design Storm) and Load-Based Numeric Goals

The water quality priorities are the primary driver of the WMP and its BMPs. As shown in **Figure A-14**, the Permit provides two pathways of numeric goals for addressing water quality priorities:

- Volume-based: Retain the standard runoff volume from the 85th percentile, 24-hour storm
- Load-based: Achieve the necessary pollutant load reductions to attain RWLs and/or WQBELs

Both types of numeric goals were evaluated as part of this RAA to assess potential management implications associated with each pathway. It was decided by the Group that in the case that the level of BMP implementation effort for the numeric goal based on the 85th percentile storm is similar to the pollutant-based numeric goal , the volume-based goal would be selected because it offers increased compliance coverage (applies to all final TMDL limits). This appendix presents the results of the analysis that compared the load- and volume-based pathways, and supported the selection of the volume-based pathway for the ESGV WMP.

Figure A-14
Two Types of Numeric Goals and WMP Compliance Paths



RB-AR4298

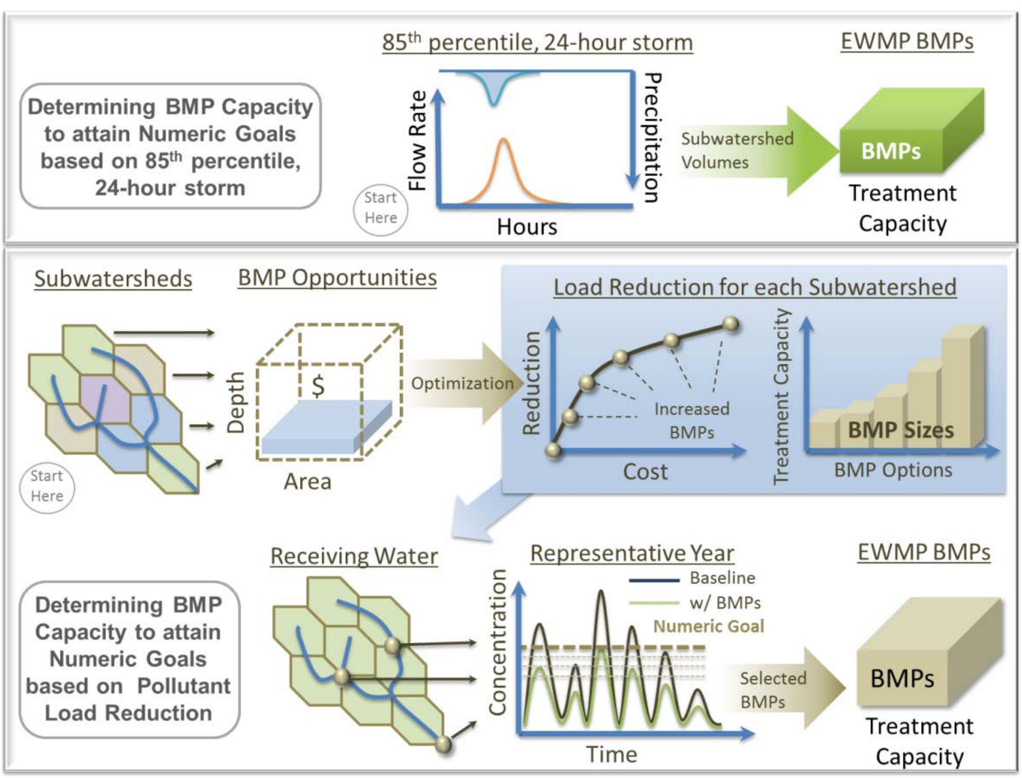
Methodology

In order to compare the load- and volume-based pathways, the WMMS model was used as a screening tool to estimate the required BMP capacities under each pathway, as follows (see Figure A-15 for an illustration of the screening process):

- Volume-based: the runoff from the 85th percentile storm for each subwatershed in the ESGV WMP area was simulated using LSPC as described in Section 5.1.4.2
- Load-based: using zinc as the limiting pollutant, the LSPC model within WMMS was used to estimate the required reductions to achieve RWLs during the 90th percentile year. and the SUSTAIN model within WMMS was used to estimate the required BMP "treatment capacities" in each subwatershed to achieve those zinc reductions.

The runoff volumes from the volume-based approach were compared directly to the BMP treatment capacities for the load-based approach. Note that while the units of these two metrics are the same (acre-feet), they represent different parameters - the former (volume-based) is a volume of runoff and the latter (load-based) is a cumulative size of BMPs. However, the two are comparable for a screening process, as the primary difference is the effect of infiltration by BMPs, which is not a primary driver of BMP size over the course of a 24-storm.

Figure A-15
Illustration of Screening Process to Compare the Load- and Volume-based Compliance Pathways



Results

The comparison of the two compliance pathways was based on the runoff volumes during the 85th percentile, 24-hour storm (volume-based) and the BMP treatment capacities to achieve RWLs for the limiting pollutant zinc (load-based). As shown in Figure A-16 and Figure A-17, these two "comparison metrics" were determined for the entire WMP area (Figure A-16) and for each of the 67 subwatersheds in the ESGV WMP area (Figure A-17), and compared to one another. The design storm approach requires more BMP capacity when implemented across the WMP area (Figure A-16). For those subwatersheds where the load-reduction approach had higher BMP capacities (those below the 1:1 line in Figure A-17), they were generally only slightly higher than the corresponding capacity for the volume-based approach (i.e., when below the 1:1 line, the capacities are close to the 1:1 line). In contrast, there were many instances when the volume-based capacities were much higher than the corresponding load-based capacities (i.e., when above the 1:1 line, the capacities are often far above the 1:1 line).

Figure A-16
Comparison of Design Storm and Load Reduction Pathways across the WMP Area

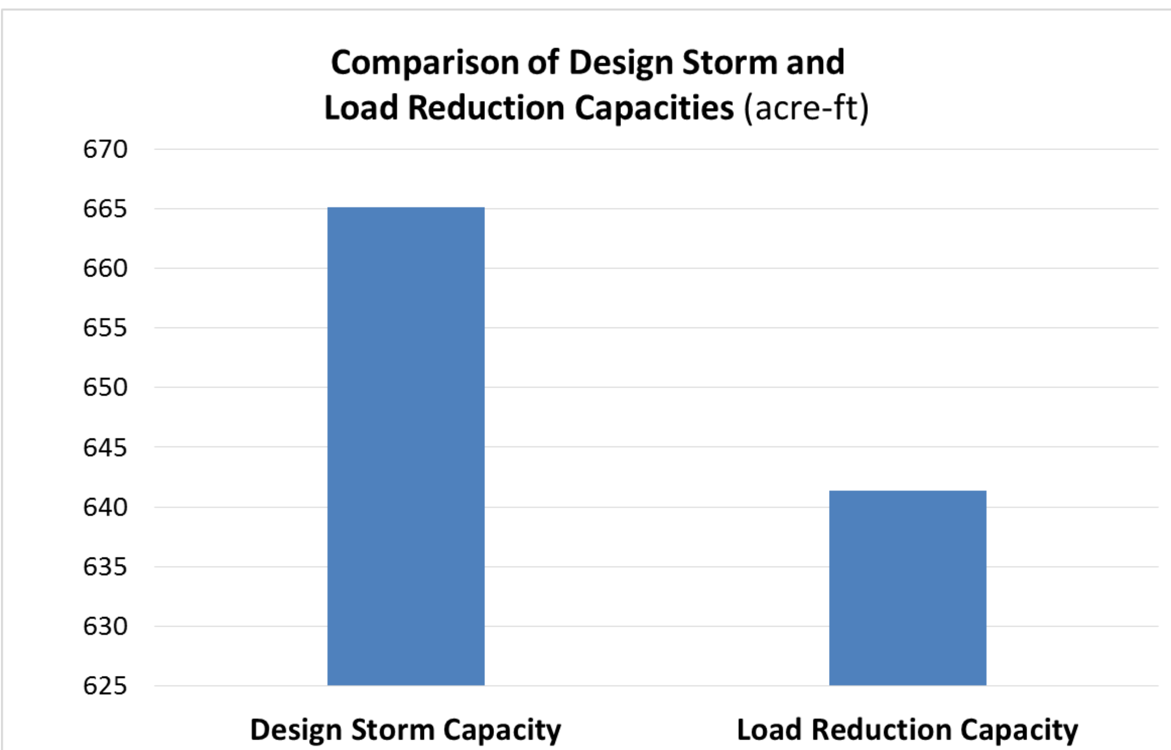
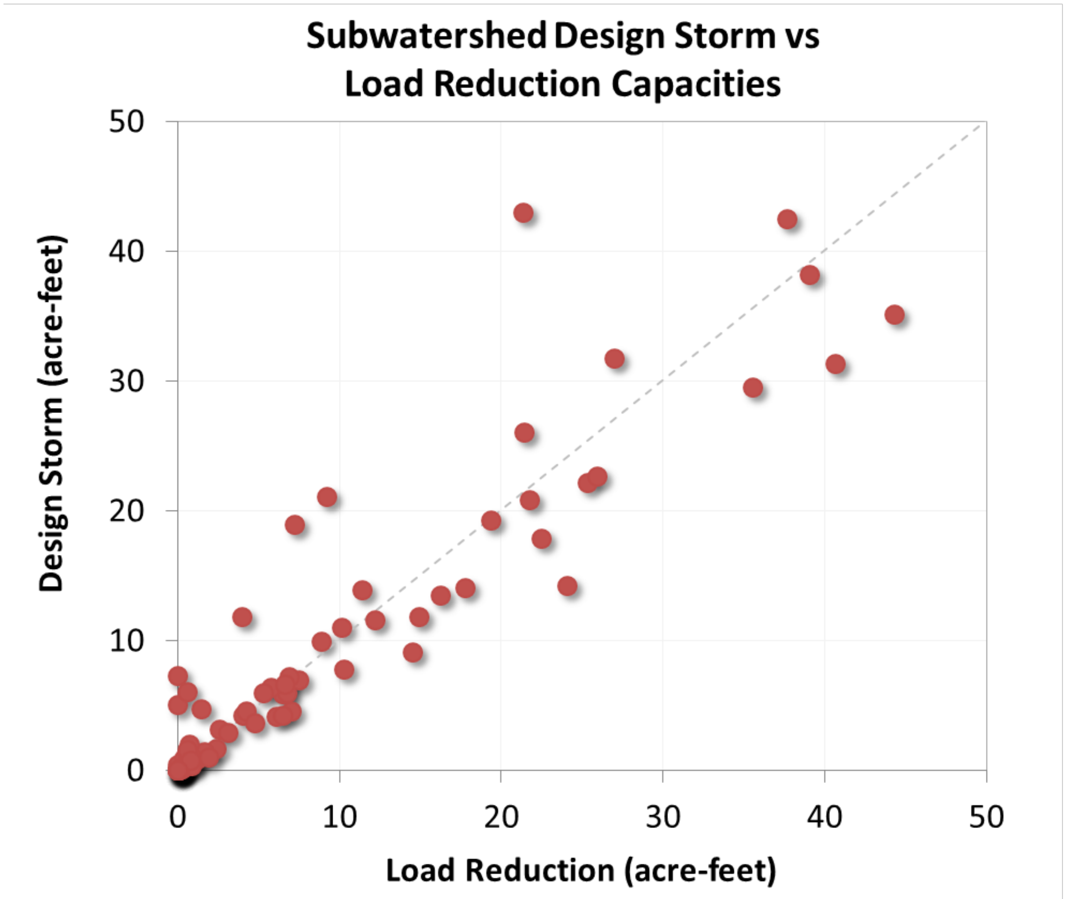


Figure A-17
Comparison of Design Storm and Load Reduction Pathways for Individual Subwatersheds



Conclusions

Because the design storm approach is more comprehensive and reliable for achieving compliance, addressing 100% of the loading from all pollutants during the 85th percentile storm (rather than targeting a single pollutant), it was selected for WMP development.

It is noted that, according to the RAA Guidelines, the selection of the 85th percentile, 24-hour as a critical condition does not need to be justified relative to corresponding pollutant conditions – it is explicitly allowed by the guidelines. The 85th percentile storm is a highly protective critical condition for WMP development, and the ESGV WMP plans to fully retain the 85th percentile storm. In other words, both the modeling approach and selected BMP sizes in the ESGV WMP are highly protective for attainment of receiving water and effluent limitations, and consistent with both the RAA Guidelines and compliance provisions of the MS4 Permit.

Appendix B

Additional Details and Supporting Information on BMP Modeling

Figure B-1
Potential High Groundwater Areas

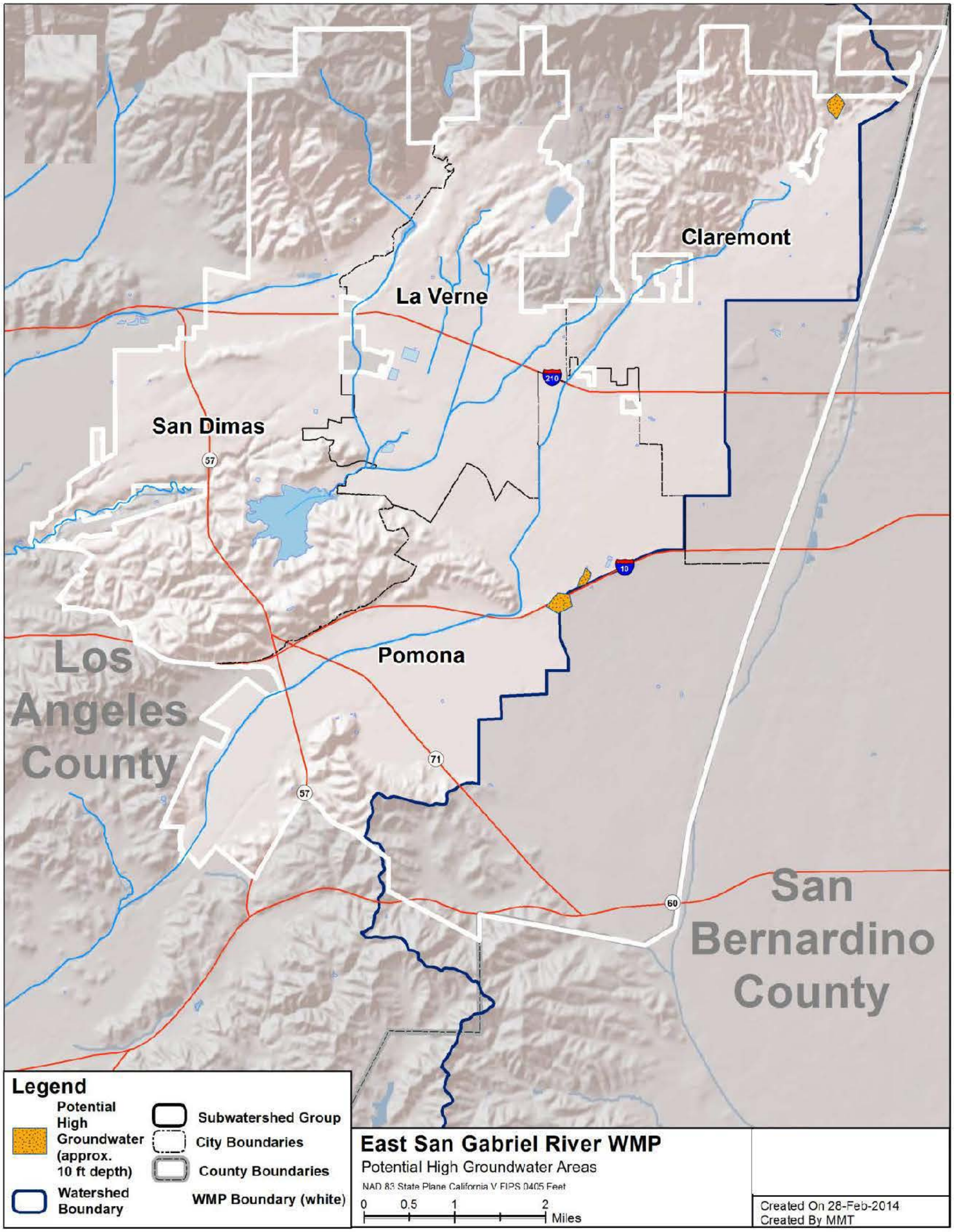


Figure B-2
ROW BMP Potential Opportunities

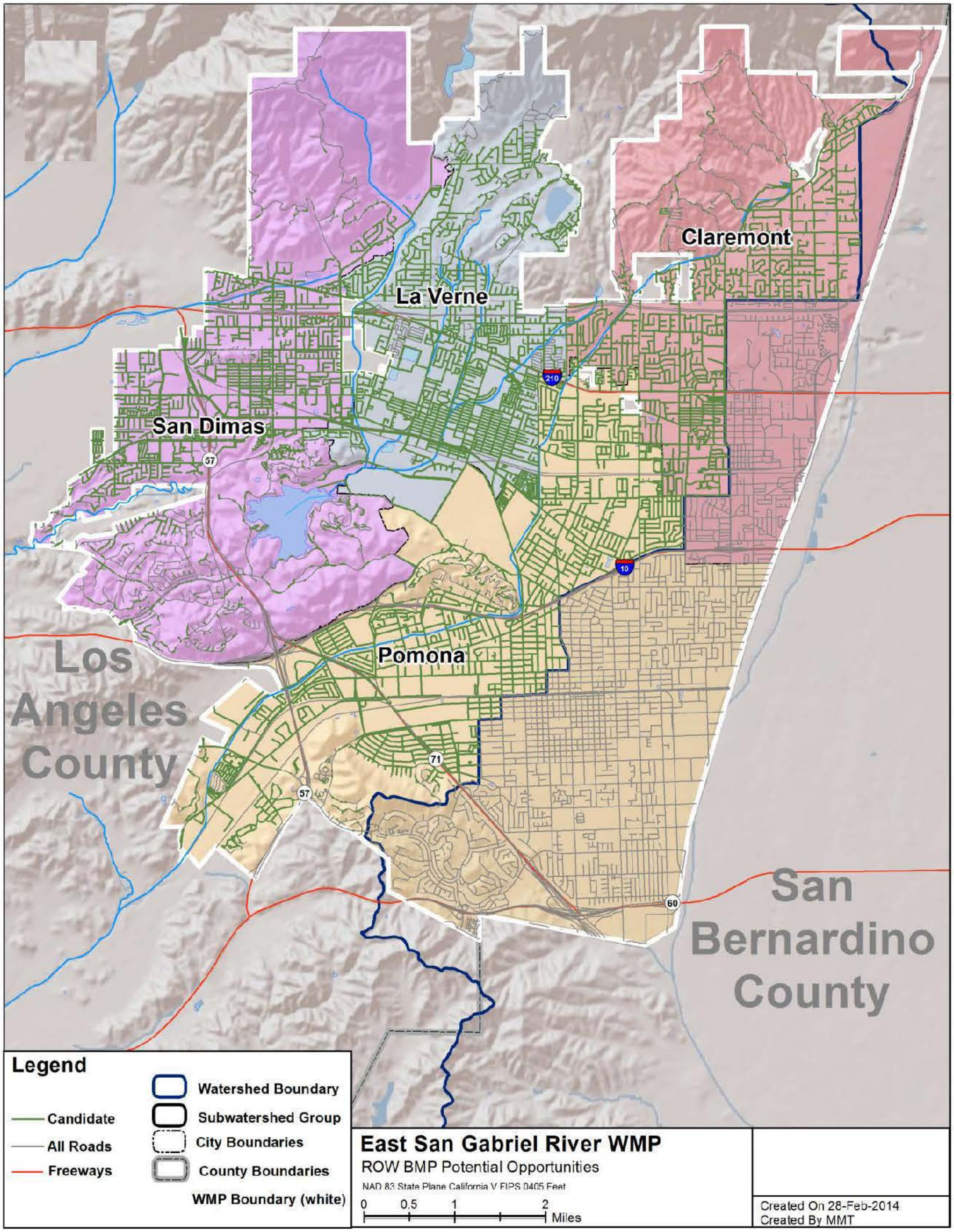


Figure B-3
ROW BMP Potential Opportunities – City of Claremont

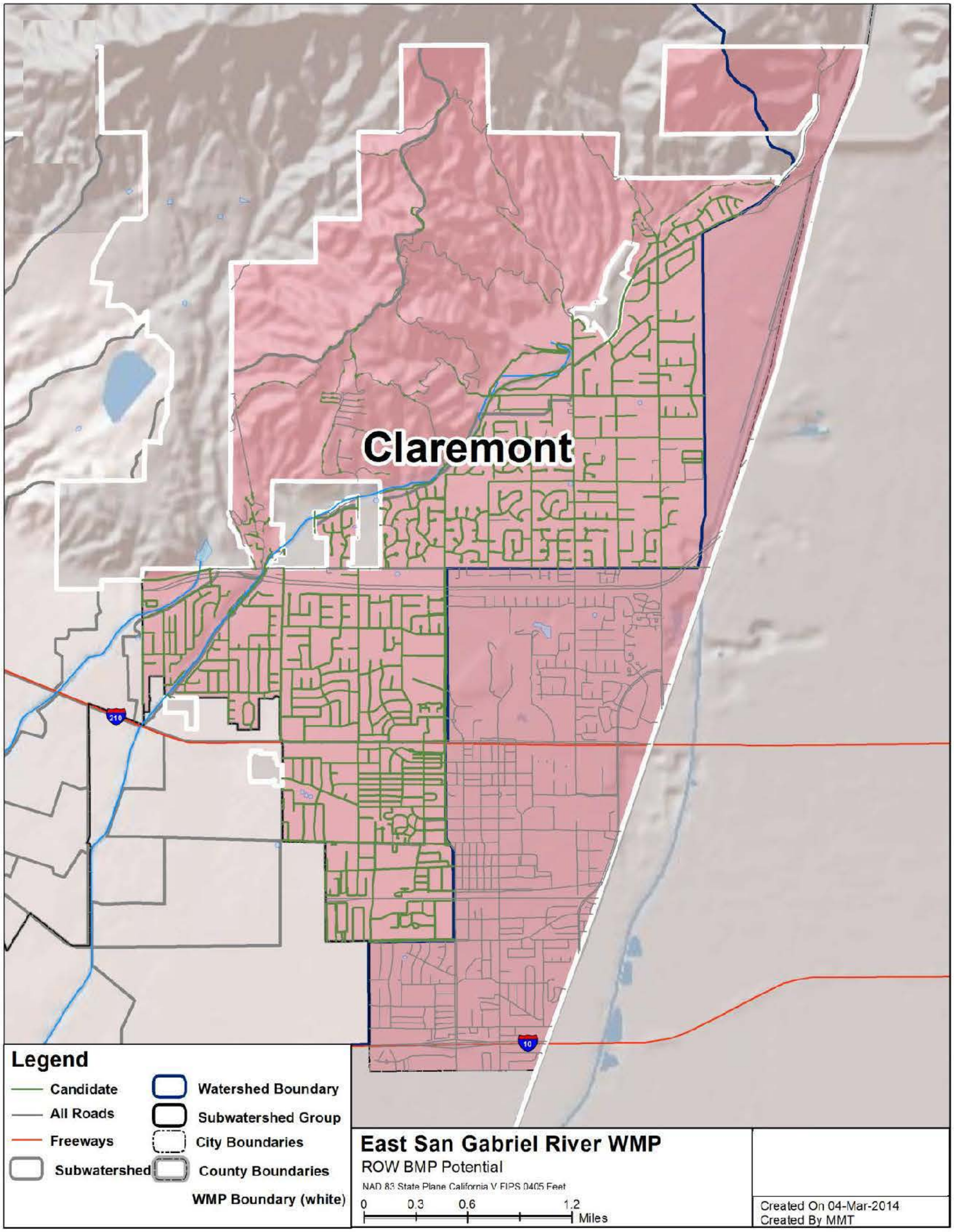


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Figure B-4
ROW BMP Potential Opportunities – City of La Verne

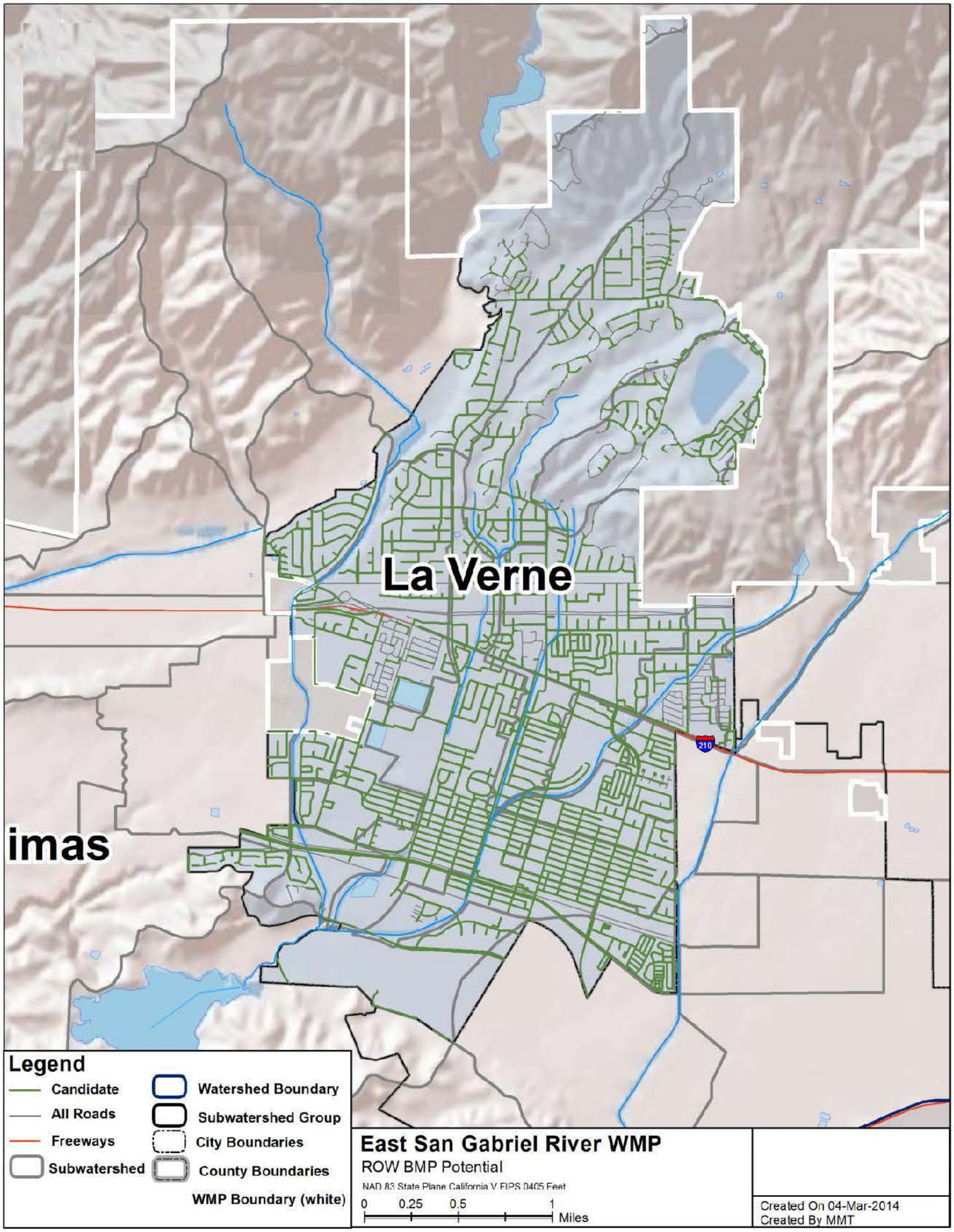

Figure B-5
ROW BMP Potential Opportunities – City of Pomona

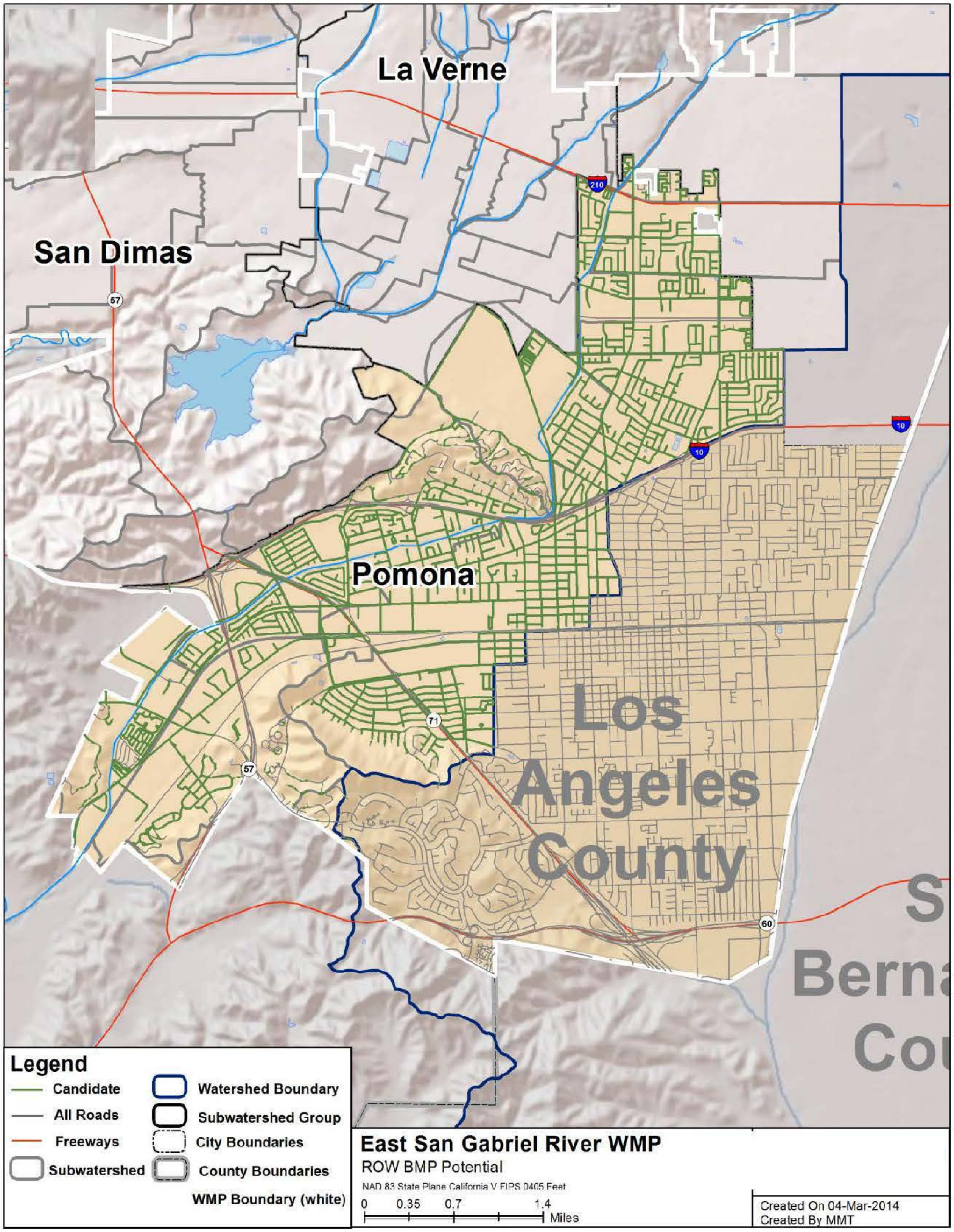

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Figure B-6
ROW BMP Potential Opportunities – City of San Dimas

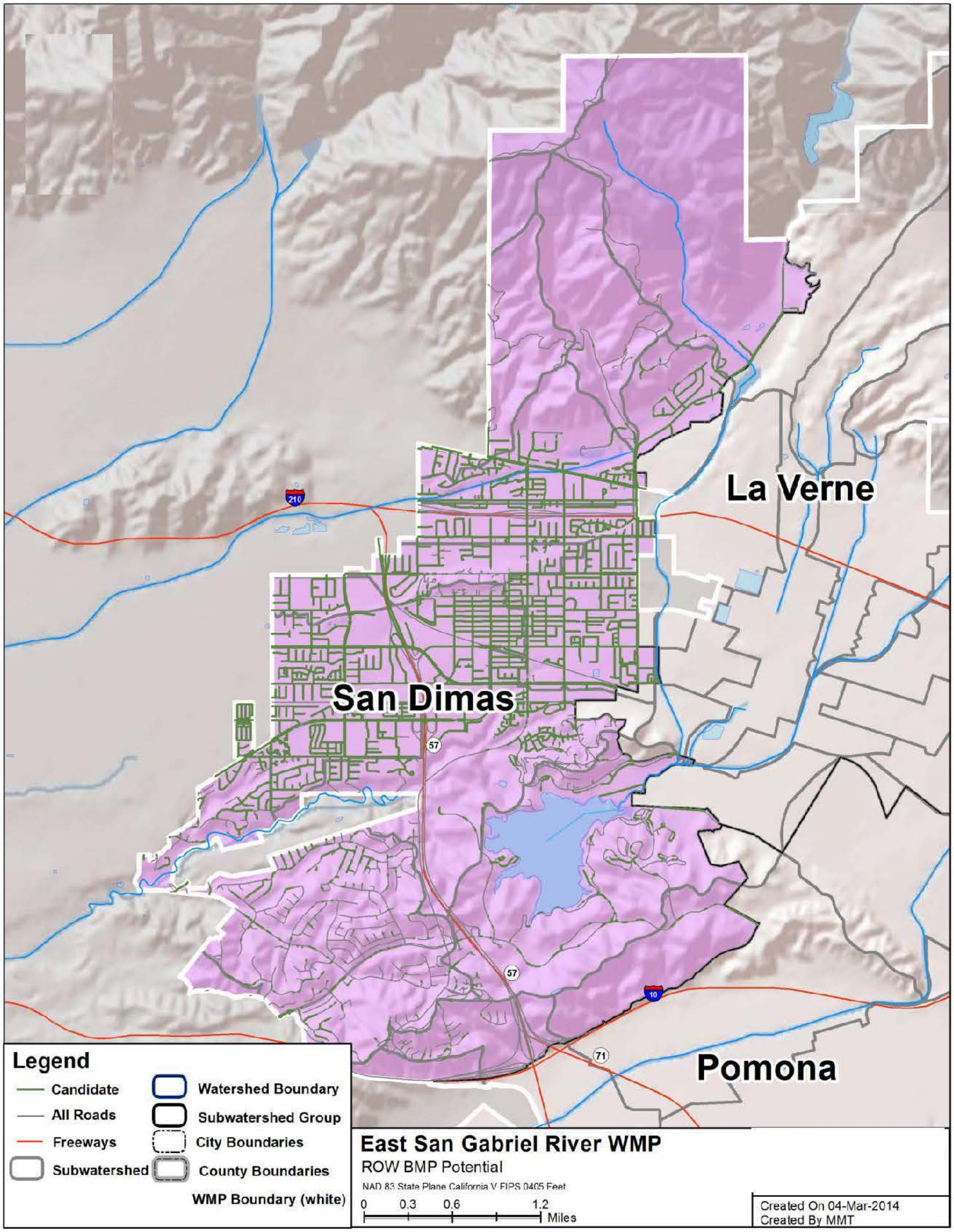


Figure B-7
Subwatershed Infiltration Rates

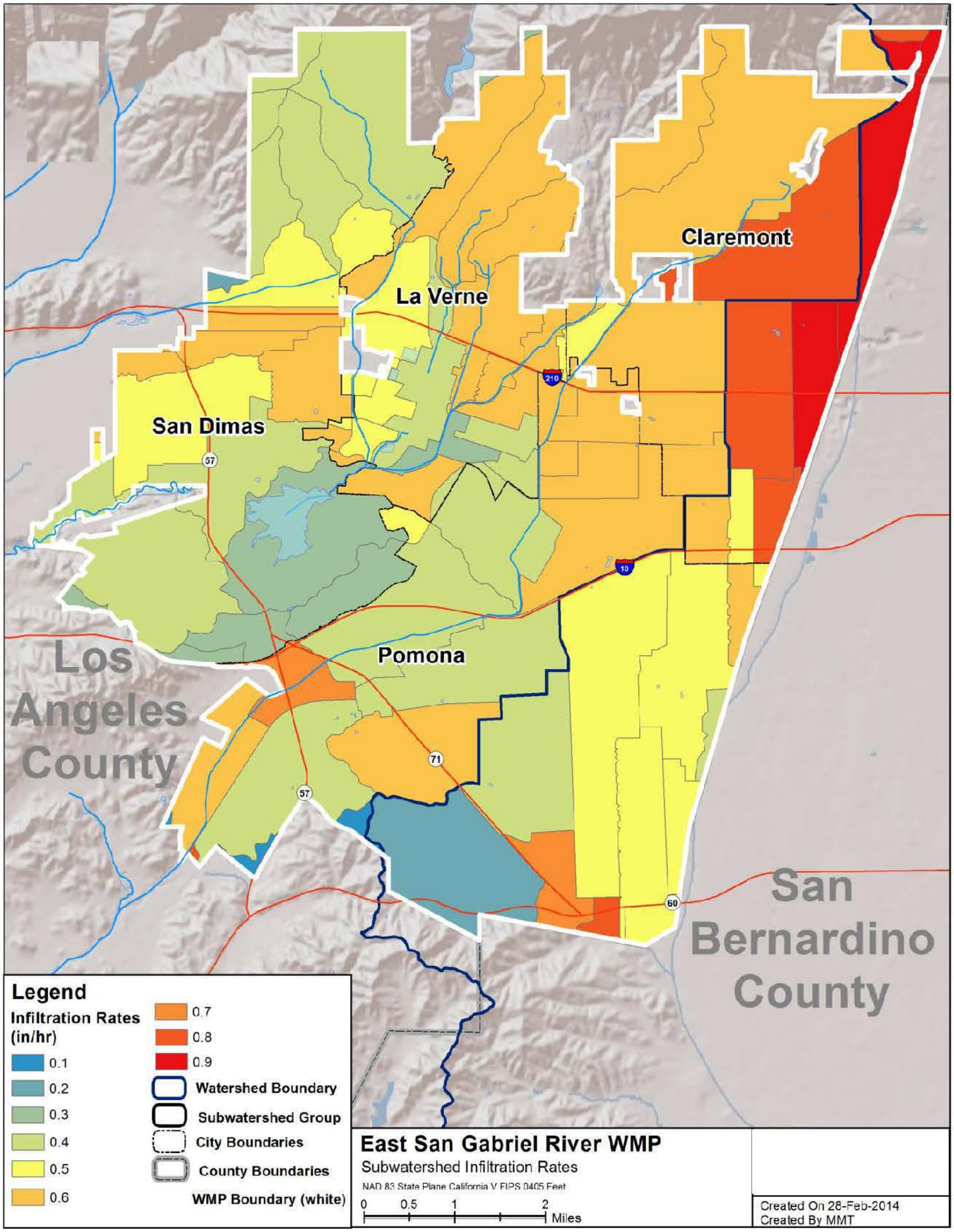


Table B-1
Jurisdictional Ranking Tables for Scheduling, Prioritizing & Implementing BMPs

Claremont

Subwatershed	Rank	Tier
175225	1	1
175221	2	1
175222	3	2
175405	4	3
175223	5	3
175216	6	3
175408	7	3
175224	8	N/A
175409	9	N/A

La Verne

Subwatershed	Rank	Tier
435397	1	1
435398	2	1
435223	3	1
435218	4	1
435221	5	1
435407	6	1
435401	7	1
435411	8	1
435220	9	1
435402	10	1
435400	11	1
435217	12	2
435409	13	2
435408	14	2
435405	15	2
435410	16	2
435404	17	3
435406	18	3
435403	19	3
435412	20	3
435399	21	3
435468	22	3
435413	23	N/A
435415	24	N/A

Pomona

Subwatershed	Rank	Tier
635208	1	1
635210	2	1
635213	3	1
635212	4	1
635223	5	1
635219	6	1
635215	7	1
635222	8	2
635217	9	2
635209	10	3
635214	11	3
635216	12	3
635220	13	3
635221	14	3
635403	15	3
635218	16	3
635408	17	3
635211	18	N/A
635207	19	N/A
635399	20	N/A

San Dimas

Subwatershed	Rank	Tier
695400	1	1
695387	2	1
695481	3	1
695468	4	1
695464	5	1
695397	6	1
695398	7	1
695395	8	1
695394	9	2
695390	10	2
695410	11	2
695411	12	2
695209	13	2
695396	14	2
695465	15	3
695466	16	3
695484	17	N/A
695393	18	N/A
695482	19	N/A
695208	20	N/A
695489	21	N/A
695412	22	N/A
695210	23	N/A
695467	24	N/A
695399	25	N/A

Figure B-8
Subwatershed Implementation Prioritization – City of Claremont

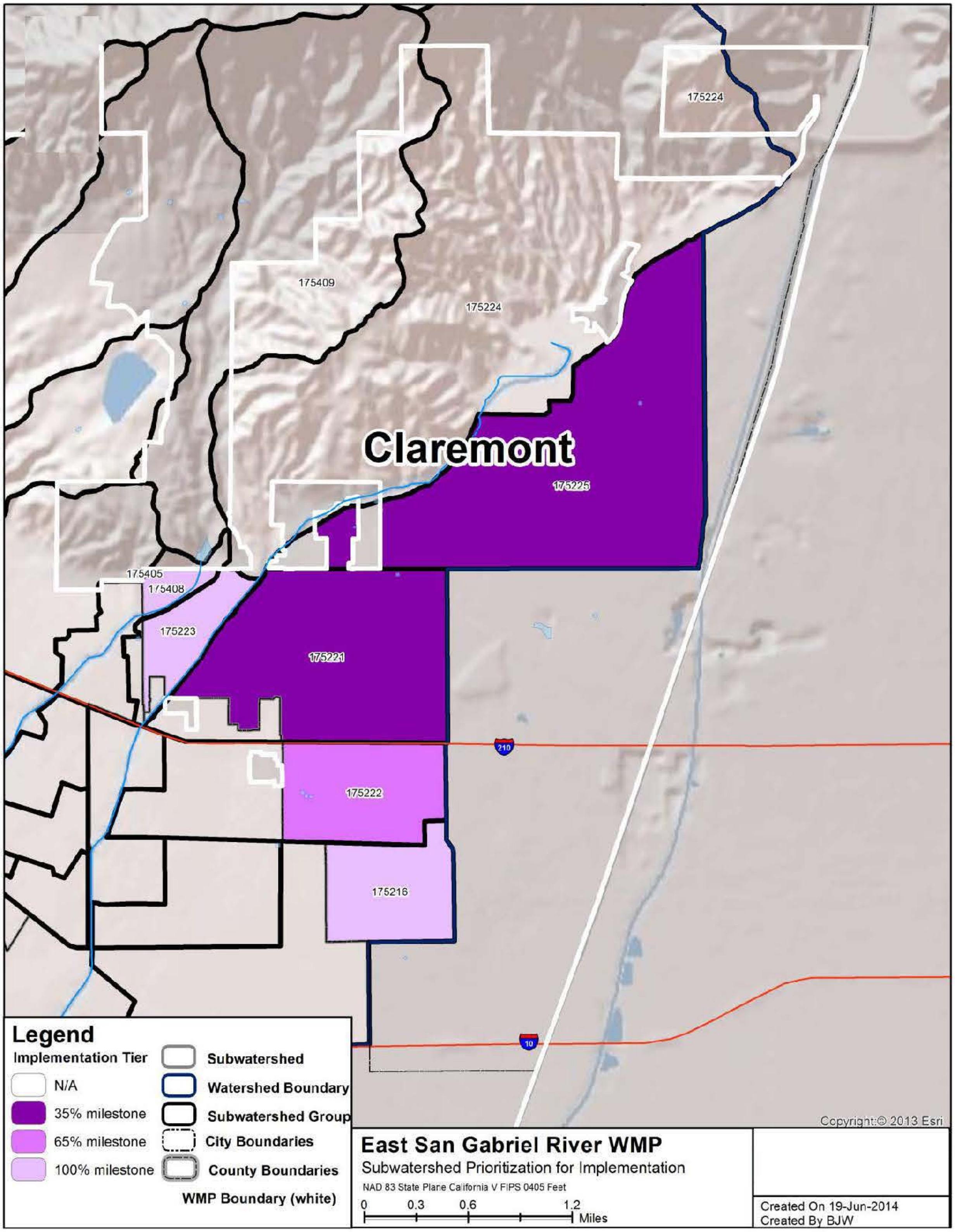


Figure B-9
Subwatershed Implementation Prioritization – City of La Verne

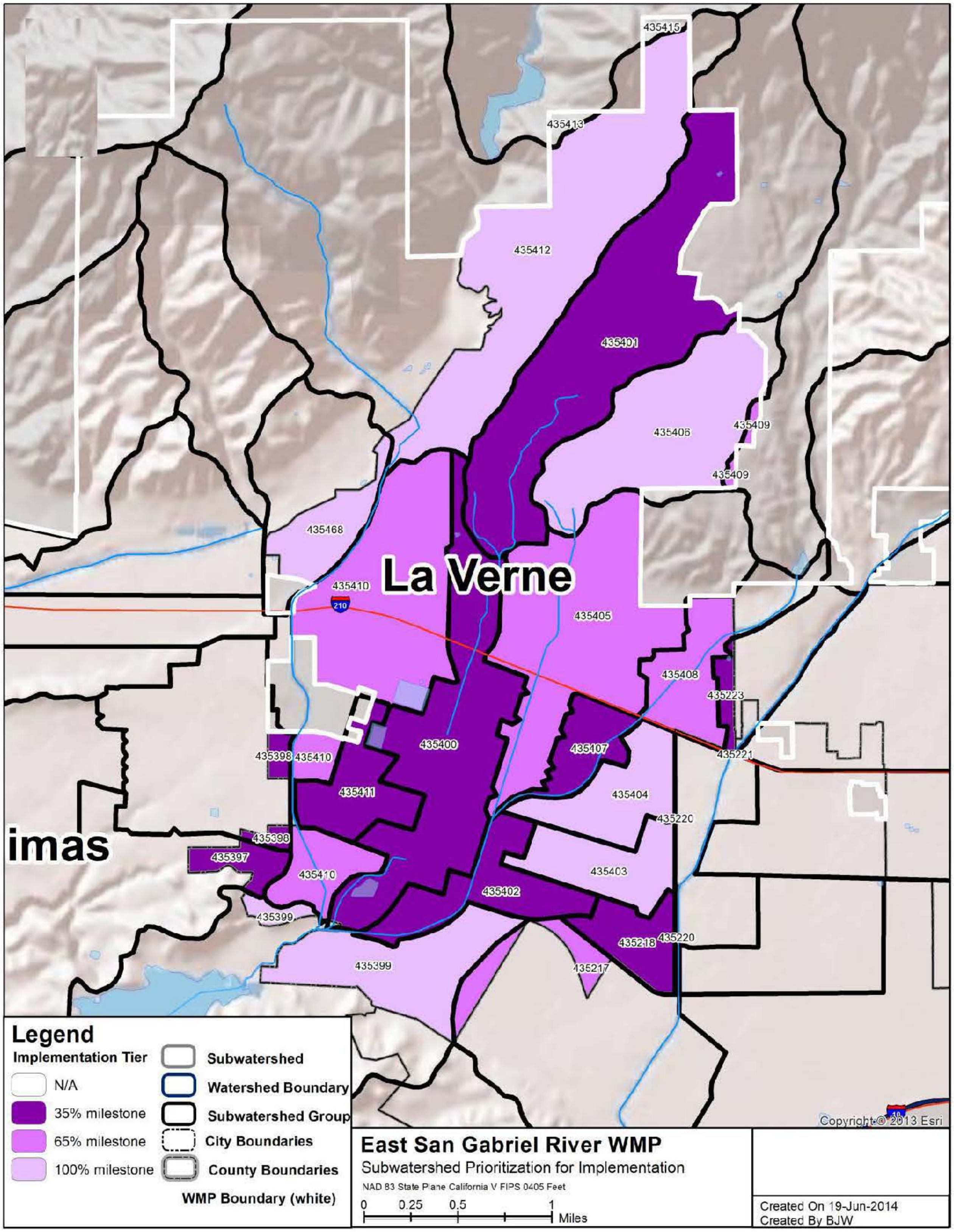


Figure B-10
Subwatershed Implementation Prioritization – City of Pomona

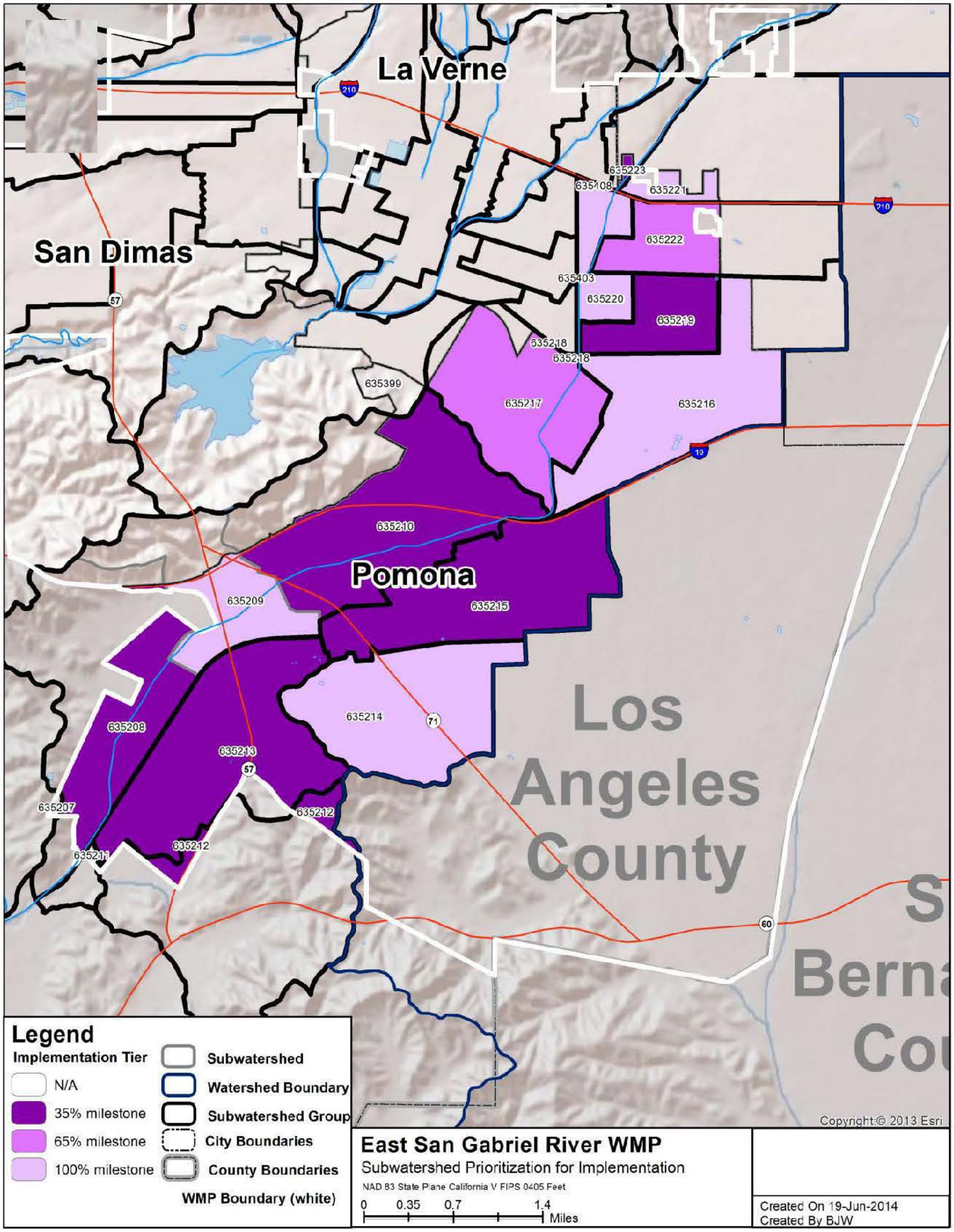
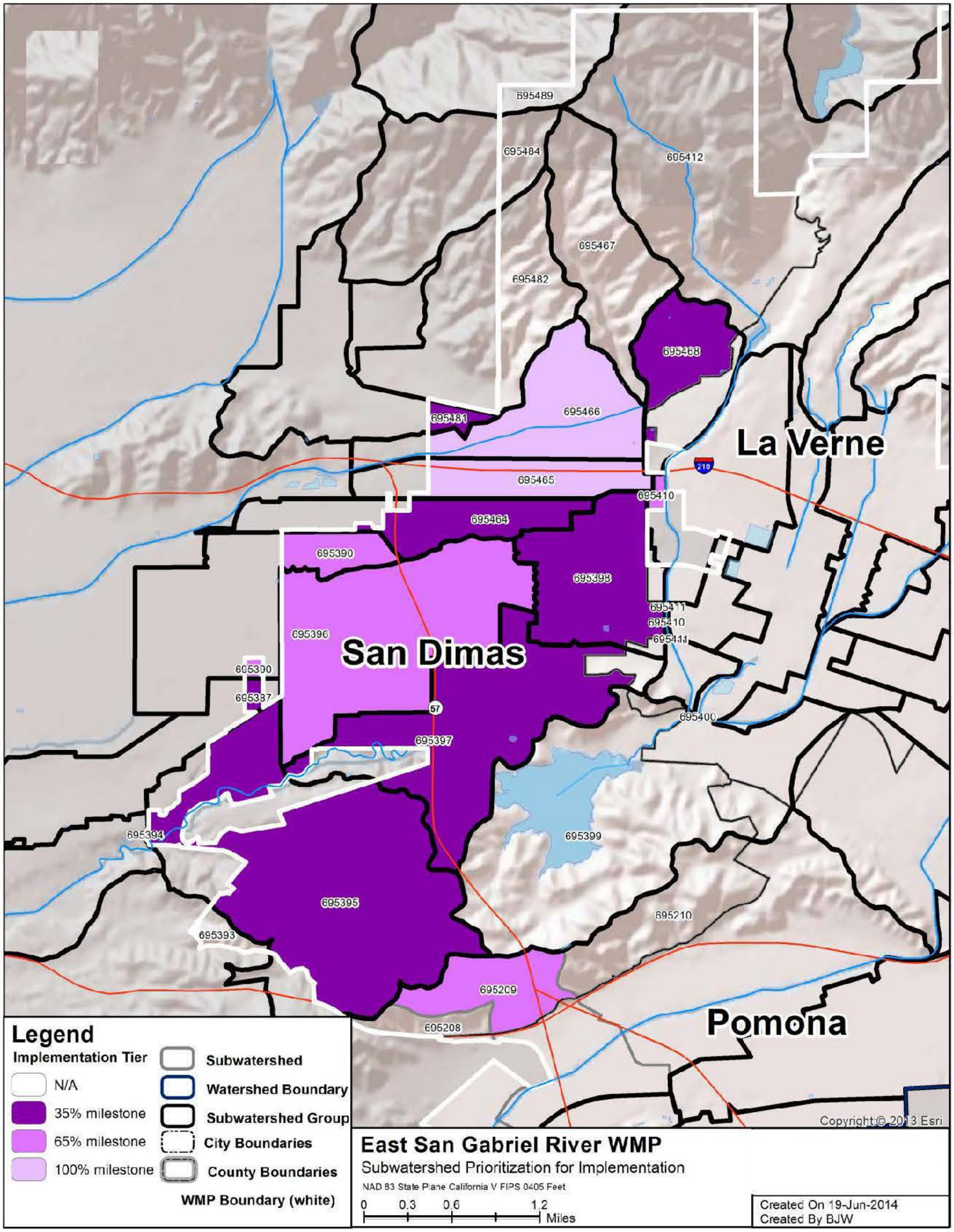


Figure B-11
Subwatershed Implementation Prioritization – City of San Dimas



Appendix C

Green Streets Policies and LID Ordinances for the East San Gabriel Valley Watershed Management Group Members

RESOLUTION NO. 2014-53

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY

WHEREAS, the new Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region, on November 8, 2012; and

WHEREAS, at the July 23, 2013 meeting, the City Council directed staff to move forward in the preparation of a Group Watershed Management Plan with the cities of Pomona, La Verne and San Dimas; and

WHEREAS, Municipalities electing to prepare a Watershed Management Plan (WMP) or an Enhanced Watershed Management Plan (EWMP) under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors; and

WHEREAS, Green Streets are enhancements to street and road projects to improve the quality of storm water and reduce urban runoff through the implementation of infiltration measures such as bioretention, infiltration trenches and dry wells; bio-treatment/infiltration measures such as flow-through planters and vegetated swales; treatment Best Management Practices (BMPs) such as catch basin filters and screens; and implementing and maintaining xeriscaped parkways and tree lined streets; and

WHEREAS, Green Streets are also an amenity that provide many benefits including groundwater replenishment, creation of attractive streetscapes, and pedestrian and bicycle accessibility.

NOW THEREFORE, THE CLAREMONT CITY COUNCIL DOES HEREBY RESOLVE:

SECTION 1. That the City Council of the City of Claremont, California, hereby directs the Director of Community Development and the Director of Community Services to implement Green Streets for transportation corridors as described in the City of Claremont Green Streets Policy, attached hereto.

SECTION 2. Routine maintenance of roadways and activities including, but not limited to, (a) application of seal coats, slurry seals, grind and overlays; and (b) reconstruction to maintain original line and grade, are excluded from the Green Streets Policy.

SECTION 3. At its regular meeting of June 24, 2014, the City Council determined that the adoption of the Green Streets Policy is necessary to support compliance with the new MS4 Permit.

SECTION 4. The Community Development Department and the Community Service Department shall incorporate aspects of Green Streets into annual staff trainings to help ensure proper implementation of such measures for transportation corridors.

SECTION 5. The City Council finds that the adoption of the Green Streets Policy is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Green Streets Policy since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the Green Streets Policy is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the Green Streets Policy would result in future unknown construction activities that would be exempt as replacement or reconstruction projects pursuant to State CEQA Guidelines section 15302. City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Resolution.

SECTION 6. The Mayor shall sign this Resolution and the City Clerk shall attest and certify to the passage and adoption thereof.

PASSED, APPROVED, AND ADOPTED this 24th day of June 2014.

Joseph M Lyons
Mayor, City of Claremont

ATTEST:

City Clerk, City of Claremont

APPROVED AS TO FORM:

City Attorney, City of Claremont

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)ss.
CITY OF CLAREMONT)

I, Shelley Desautels, City Clerk of the City of Claremont, County of Los Angeles, State of California, hereby certify that the foregoing Resolution No. 2014-53 was regularly adopted by the City Council of said City of Claremont at a regular meeting of said Council held on the 24th day of June, 2014, by the following vote:

AYES:	COUNCILMEMBERS:	CALAYCAY, LYONS, NASIALI, PEDROZA, SCHROEDER
NOES:	COUNCILMEMBERS:	NONE
ABSTENSIONS:	COUNCILMEMBERS:	NONE
ABSENT:	COUNCILMEMBERS:	NONE

S. Desautels

City Clerk of the City of Claremont

ORDINANCE NO.2014-

AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLISHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF.

WHEREAS, the City of Claremont is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City of Claremont has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State; and

WHEREAS, the City is a permittee under the “Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4,” issued by the California Regional Water Quality Control Board – Los Angeles Region,” (Order No. R4-2012-0175), which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the “Municipal NPDES permit”).

WHEREAS, the MS4 Permit requires those permittees submitting a Watershed Management Plan, or an Enhanced Watershed Management Plan to develop and implement a Low Impact Development (LID) Ordinance; and

WHEREAS, the new MS4 Permit establishes new requirements regulating discharge and connection into the City’s storm drain facilities, and control of stormwater and non-stormwater runoff; and

WHEREAS, the City of Claremont is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social and economic considerations; and

WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of stormwater and non-stormwater runoff by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

WHEREAS, it is the intent of the City of Claremont to replace the existing Standard

Urban Stormwater Mitigation Plan (SUSMP) requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under Section 8.28.050(C) "Applicability". Where there are conflicts between this Ordinance and previously adopted SUSMP or LID Manuals, the standards in this Ordinance shall prevail.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF CLAREMONT DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 8.28 (Stormwater and Runoff Pollution Control) of Title 8 of the Municipal Code (Public Health and Safety) is hereby deleted and replaced in its entirety, as follows:

Chapter 8.28
STORMWATER AND RUNOFF POLLUTION CONTROL

Sections:

8.28.010 Definitions.

The following words, phrases and terms as used in this chapter shall have the meanings ascribed to them in this Section 8.28.010.

Act or **Clean Water Act (CWA)** means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq.

Adverse Impact means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants to the storm drain system or to receiving waters.

Automotive Service Facility means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes: SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539.

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional

Water Board on June 13, 1994 and subsequent amendments.

Beneficial Uses means existing or potential uses of receiving waters in the permit area as designated by the Regional Board in the Basin Plan.

Best Management Practice (BMPs) means practices or physical devices or systems designed to prevent or reduce pollutant loading from storm water or non-storm water discharges to receiving waters, or designed to reduce the volume of storm water or non-storm water discharged to the receiving water.

Biofiltration means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term “biofiltration” as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board’s Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales.

Bioretention means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

Bioswale means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

City means the City of Claremont, California.

Code of Federal Regulations (CFR) means the codification of the general and permanent rules and regulations published in the Federal Register by the executive departments and agencies of the federal government of the United States.

Commercial Development means any public or private activity not defined as an industrial activity in 40 CFR 122.26(b)(14), involved in the storage, transportation, distribution, exchange or sale of goods and/or commodities or providing professional and/or nonprofessional services. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers .

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage is required if more than one acre is disturbed or the activities are part of a larger plan..

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

Council means the City Council of the City of Claremont.

Dechlorinated/Debrominated Swimming Pool/Spa Discharges means discharges from swimming pools/spas and do not include swimming pool/spa filter backwash or swimming pool/spa water containing bacteria, detergents, wastes, or algaecides, or any other chemicals including salts from salt water pools.

Department means the Community Development Department of the City of Claremont.

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

Director means the Director of Community Development, or his/her authorized deputy, agent, representative or inspector.

Discharge means any addition, release, spill, leak, pumping, flow, escape, dumping, or disposal of any pollutant to the storm drain system or to receiving waters from any conveyance or source regulated under the Clean Water Act or its regulations.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation.

Drinking Water Supplier Distribution System Releases means sources of flows from drinking water storage, supply and distribution line testing, and flushing and dewatering of pipes, reservoirs, and vaults, minor non-invasive well maintenance not involving chemical addition(s) where otherwise regulated by NPDES Permit No CAG674001, NPDES Permit No. CAG994005, or another separate NPDES permit.

Essential Non-Emergency Fire Fighting Activities means fire fighting activities, which simulate emergency responses, and routine maintenance and testing activities necessary for the protection of life and property, including building fire suppression

system maintenance and testing (e.g. sprinkler line flushing) and fire hydrant testing and maintenance. Discharges from vehicle washing are not considered essential and as such are not conditionally exempt.

Flow-through BMPs means modular, vault type “high flow biotreatment” devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Green Roof means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

Good Housekeeping Practice means a best management practice related to the transfer, storage, use, or cleanup of materials which when performed in a regular manner minimizes the discharge or potential discharge of pollutants to the storm drain system and/or receiving waters.

Hazardous Material means any material defined as hazardous by Chapter 6.95 of the California Health and Safety Code or any substance designated pursuant to 40 CFR 302. This also includes any unlisted hazardous substance which is a solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), or is a hazardous substance under Section 101(14) of the Act, if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

Hazardous Waste means a hazardous material which is to be discharged, discarded, recycled, and/or reprocessed.

Hillside means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

Illicit Connection means either of the following:

1. Any drain or conveyance whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by a government agency; or

2. Any drain or conveyance connected from a commercial or industrial land use

to the storm drain system which has not been documented in plans, maps or equivalent records and approved by the City.

Illicit Discharge means any discharge to the storm drain system or receiving waters that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. Illicit discharge includes all non-stormwater discharges except discharges pursuant to a NPDES permit or discharges that are exempted or conditionally exempted by such permit.

Impervious Surface means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

Industrial Activity means any public or private activity as defined in 40 CFR 122.26(b)(14) required to obtain a NPDES permit.

Industrial/Commercial Facility means any public or private facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, or any facility involved and/or used in providing professional and nonprofessional services. This category of facility includes, but is not limited to, any facility defined by a Standard Industrial Classification (SIC).

Industrial Park means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.

Infiltration BMP means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement.

LID means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

MS4 means Municipal Separate Storm Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

National Pollutant Discharge Elimination System (NPDES) permit means a general, group, or industrial permit issued by the United States Environmental Protection Agency, the State Water Resources Control Board or a California Regional Water Quality Control Board pursuant to the Act, that authorizes discharges to waters of the United States.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-Stormwater Discharge means any discharge to the storm drain system and/or receiving waters that is not composed entirely of stormwater.

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces

Permit means the Waste Discharge Requirements for Municipal Separate Storm Sewer Systems within the Coastal Watersheds of Los Angeles County (Order No. R4-2012-0175) and the National Pollutant Discharge Elimination System Permit No. CAS004001, including any amendments, reissuance, renewal, or successor permit issued by the Regional Board.

Person means any natural person, firm, association, club, organization, corporation, partnership, business, trust, public agency, company or other entity which is recognized by law as the subject of rights and duties.

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s).

Pollutant shall have the same meaning as set forth in Section 502(6) of the Act and as incorporated into the California Water Code Section 13373. Pollutants include, but are not limited to the following:

1. Commercial and industrial waste (such as fuels, solvents, chemicals, detergents, plastic pellets,
hazardous materials or substances, hazardous wastes, fertilizers, pesticides, soot, slag, ash, and sludge);
2. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium and arsenic) and nonmetals (such as carbon, chlorine, fluorine, phosphorous and sulfur);
3. Petroleum hydrocarbons (such as fuels, oils, lubricants, surfactants, waste oils, solvents, coolants, and grease);
4. Eroded soils, sediment, and particulate materials in amounts which may adversely affect any beneficial use of the receiving waters, flora, or fauna of the state;
5. Animal wastes (such as discharges from confinement facilities, kennels, pens,

recreational facilities, stables, and show facilities);

6. Substances having acidic or corrosive characteristics such as a pH of less than six or greater than nine;

7. Substances having unusual coloration or turbidity, levels of fecal coliform, fecal streptococcus, or enterococcus, which may adversely affect the beneficial use of the receiving waters, flora, or fauna of the state; and

8. Anything which causes the deterioration of water quality such that it impairs subsequent and/or competing uses of the water.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department.

Receiving Waters means all waters of the United States into which a pollutant is or may be discharged. "Waters of the United States" means surface watercourses and water bodies as defined at 40 CFR 122.2, including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry stormwater at and during all times and seasons.

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Board means a Los Angeles Regional Water Quality Control Board.

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.

Routine Maintenance

Routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

Runoff means any stormwater or non-stormwater discharge from any surface and/or drainage area that reaches the storm drain system and/or receiving waters.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Significant Ecological Areas (SEAs) means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Source: Order No. R4-2012-0175).

Site means land or water area where any “facility or activity” is physically located or conducted, including adjacent land used in connection with the facility or activity.

State Board means the State Water Resources Control Board.

Storm Drain System means any street, gutter, conduit, natural or artificial drain, curb, inlet, detention and retention basins, channel and watercourse, and/or other facility or any combination thereof, that is owned or operated by the city and used for the purpose of collecting, storing, conveying, transporting, and/or disposing of runoff.

Storm Water or Stormwater means any surface flow, runoff or drainage which

originates from atmospheric moisture (rainfall or snowmelt) and falls onto land, water, and/or other surfaces.

Stormwater Pollution Prevention Plan (SWPPP) means a plan required by and whose contents are specified in a NPDES permit.

Stormwater Runoff means stormwater which travels across any surface to the storm drain system or receiving waters.

Structural BMP means any permanent facility constructed to control, treat, store, divert, neutralize, dispose of, and/or monitor runoff in order to reduce or measure pollutants.

SUSMP means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects. The requirements of this Chapter replace the SUSMP unless otherwise required by the Director or State or Regional Board.

Uncontrolled Discharge means any discharge, intentional or accidental, occurring in such a manner that the discharger is unable to determine or regulate the quantity, quality or effects of the discharge.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

U.S. EPA means the United States Environmental Protection Agency.

8.28.020 General Provisions.

A. Short title. The ordinance codified in this chapter shall be known as the "Stormwater and Runoff Pollution Control Ordinance" and may be referred to as such.

B. Purpose and intent. The purpose of this chapter is to protect the health and safety of the residents of the city by protecting the beneficial uses, marine habitats, and ecosystems of receiving waters from pollutants carried by stormwater and non-stormwater discharges. The intent of this chapter is to enhance and protect the water quality of receiving waters consistent with the Act.

C. Applicability of this chapter. The provisions of this chapter shall apply to the discharge, deposit, addition or disposal of any non-stormwater, stormwater and/or runoff to the storm drain system and/or receiving waters within the City of Claremont.

D. Standards, guidelines and criteria. The director may establish uniform minimum standards, guidelines, and/or criteria for specific discharges, connections and/or BMPs. The provisions of this section shall not prohibit the director from requiring a discharger or permittee from taking additional measures to achieve the objectives of this chapter or any permit. (00-07)

8.28.030 Discharge to the Storm Drain System

A. Except as otherwise conditionally authorized by the Permit or any other NPDES permit, waiver or waste discharge order issued by the U.S. EPA, the state board, or a regional board, provided that the discharger is in full compliance with all requirements of

the permit, waiver or order and other applicable laws and regulations, including the provisions of this chapter, and subject to any requirements specified by the Director, no person shall:

1. discharge non-stormwater to the City's storm drain system or to receiving waters except in compliance with the requirements of this Chapter;
2. cause, allow or facilitate any prohibited discharge;
3. discharge, cause, allow or facilitate any discharge that may cause or threaten to cause a condition of pollution or nuisance as defined in Water Code section 13050, that may cause, threaten to cause or contribute to an exceedance of any water quality standard in any Statewide Water Quality Control Plan, California Toxics Rule, or Basin Plan, or that may cause or contribute to the violation of any receiving water limitation.

B. Pursuant to the Permit, discharges which may be conditionally authorized subject to best management practices and other restrictions or prohibitions determined by the Director include, but are not limited to the following types of discharges:

1. Authorized non-storm water discharges from emergency fire-fighting activities (i.e., flows necessary for the protection of life or property;
2. Natural flows, including natural springs;
3. Flows from riparian habitats and wetlands;
4. Diverted stream flows, authorized by the State or Regional Water Board; Uncontaminated ground water infiltration;
5. Rising ground waters where ground water seepage is not otherwise covered by a NPDES permit;
6. Discharges from drinking water supplier distribution systems where not otherwise regulated by an individual or general NPDES permit;
7. Landscape irrigation;
8. Uncontaminated foundation and footing drains;
9. Uncontaminated water from crawl space pumps;
10. Air conditioning condensation;
11. Uncontaminated non-industrial roof drains;
12. Individual residential and occasional non-commercial car washing;
13. Dechlorinated/debrominated swimming pool/spa discharges; and
14. Street and sidewalk wash waters.

C. The Director may limit or prohibit any discharge which is conditionally authorized by the Permit if the discharge is a source of pollutants or causes or contributes to an exceedance of applicable receiving water limitations or water quality based effluent limitations, including but not limited to imposing conditions on such discharge, requiring control measures and other actions to reduce pollutants, requiring diversion of the discharge to the sanitary sewer, or requiring pretreatment.

D. The Director may require any person to obtain a permit from the City before discharging, or causing, allowing, or facilitating any discharge to the storm drain system. It is unlawful to discharge, cause, allow, or facilitate any discharge to the storm drain system in violation of any permit so required.

E. Littering and other discharge of polluting or damaging substances prohibited.

1. No person shall cause any refuse, rubbish, food waste, garbage, or any other discarded or abandoned objects to be littered, thrown, deposited, left, accumulated, maintained or kept in or upon any street, alley, sidewalk, storm drain, inlet, catch basin, conduit, drainage structure, place of business, or upon any public or private property so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters, except when such materials are placed in containers, bags, recycling bins, or other lawfully established waste disposal facilities protected from stormwater or runoff.

2. No person shall cause the disposal of hazardous materials or hazardous wastes into trash containers used for municipal trash disposal.

3. No person shall cause to be discharged to the storm drain system or to receiving waters any pesticide, fungicide, or herbicide prohibited by the U.S. EPA or the California Department of Pesticide Regulation.

4. No person shall cause the accumulation of pollutants, leaves, dirt, or other landscape debris into a street, alley, catch basin, culvert, curb, gutter, inlet, ditch, natural watercourse, flood control channel, canal, storm drain, or any fabricated or natural conveyance so that the same may or does become a pollutant which may or does enter the storm drain system or receiving waters.

5. No person shall cause the disposal of sanitary or septic waste or sewage into the storm drain system from any property or residence or any type of recreational vehicle, camper, bus, boat, holding tank, portable toilet, vacuum truck or other mobile source of waste holding tank, container or device.

6. No person shall discharge or cause to be discharged anything that would result in or contribute to a violation of the city's NPDES permit and any amendment, revision or re-issuance, thereof, either separately or when combined with other discharges.

8.28.031 Illicit Connections Prohibited

A. Installation or use of illicit connections prohibited. No person shall install, maintain or use any connection to the storm drain system or act, cause, permit or suffer any non-stormwater to be discharged or conveyed through a connection to the storm drain system unless the connection has been permitted by the director. This prohibition is retroactive and applies to connections made in the past, regardless of whether made under a permit or other authorization, or whether permissible under the laws or practices applicable or prevailing at the time of the connection.

B. Removal of illicit connection from the storm drain system. If any person fails to remove an illicit connection upon notification by the director, or upon revocation of a connection permit, the director may remove such connection from the storm drain system pursuant to Section 8.28.060 of this chapter. The director may pursue the recovery of costs for such removal pursuant to Section 8.28.060 of this chapter.

8.28.032 Best Management Practices Required

A. Any person engaged in activities which will or may result in pollutants entering the City storm drain system shall undertake all control measures and BMPs as the Director may require to reduce such pollutants. Premises with a high potential threat of discharge may be required to implement a monitoring program meeting standards established by the City. Where best management practices guidelines or requirements have been adopted by any Federal, State, regional, and/or City agency, for any activity, operation, or facility which may cause or contribute to stormwater pollution or contamination, illicit discharges, and/or discharges of non-stormwater to the storm drain system, every person undertaking such activity or operation, or owning or operating such facility shall comply with such guidelines or requirements as may be identified by the Director.

B. Installation of structural BMPs. No person shall install a structural BMP for the purpose of treating, neutralizing, disposing of, monitoring or diverting to the sanitary sewer system any runoff without the approval of the director and of the Los Angeles County Sanitation District or any successor thereto. Such facilities may be subject to plan review, application and issuance of operating permits pursuant to this code.

C. BMPs to be consistent with environmental goals. No person shall install or implement a BMP that transfers pollutants to air, groundwater, surface soils and/or other media in a manner inconsistent with applicable environmental laws and regulations.

D. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to submit documentation demonstrating coverage by and compliance with any applicable permit, including copies of any notice of intent, storm water pollution prevention plans, inspection reports, monitoring results, and other information deemed necessary to assess compliance with this Chapter or any NPDES permit. Each discharger identified in an individual NPDES permit relating to stormwater discharges shall comply with and undertake all activities required by such permit.

E. The Director may require any person responsible for any industrial or commercial facility or new or redevelopment project to enter into an agreement for the operation and maintenance of any structural control measures and to record such agreement with the County Recorder's office.

F. The following BMPs are required of every owner or occupant of any property:

1. No person shall leave, deposit, discharge, dump, or otherwise expose any chemical, fuel, animal waste, garbage, batteries and/or septic waste in an area where actual or potential discharge to the city streets or the storm drain system may occur. Any spills, discharge, or residues shall be removed as soon as possible and disposed of properly.

2. Runoff from landscape irrigation, air conditioning condensate, water line flushing, foundation/footing drains, individual residential car washing, dechlorinated/debrominated swimming pool/spa discharges and sidewalk washing shall be conducted in a manner which minimizes or eliminates the possibility of pollutant discharges reaching the city storm drain system or

receiving waters.

3. Runoff from washing paved areas, including but not limited to parking lots, on industrial or commercial property is prohibited unless specifically required by federal, state, or local health or safety codes and not in violation of any other provision of this code. Runoff from authorized washing of paved areas shall be minimized to the extent practicable.
4. Objects, such as motor vehicle parts, containing grease, oil, or other hazardous materials, and unsealed receptacles containing hazardous materials, shall not be stored in areas exposed to stormwater or otherwise susceptible to runoff.
5. Any machinery or equipment which is to be repaired or maintained in areas exposed to stormwater or otherwise susceptible to runoff shall be provided with containment areas to control leaks, spills, or discharges.
6. All motor vehicle parking lots with more than 25 parking spaces and located in areas exposed to stormwater or otherwise susceptible to runoff shall have debris removed by regular sweeping or other equally effective measures. Such debris shall be collected and properly disposed of.

8.28.033 Monitoring, Information Collection, and Reporting

A. The Director may require any person discharging or causing, allowing, or facilitating a discharge to the storm drain system or receiving waters to take any or all of the following actions:

1. to submit information necessary to comply with the Permit or to confirm that person's compliance with this Chapter;
2. to monitor discharges and submit reports of discharge activities;
3. to maintain records of monitoring and discharging; and
4. to take any other action necessary to comply with the Permit or this Chapter.

B. Notwithstanding any other requirement of law, any known or suspected release of materials, pollutants or waste, which may result in pollutants or non-stormwater discharges entering storm water, the storm drain system or waters of the state or United States, shall be reported immediately in the following manner by any person in charge of a premises or responsible for the premises' emergency response:

1. The release of a hazardous material shall be immediately reported to emergency services by emergency dispatch services (911).
2. The release of a nonhazardous material shall be reported as follows:
   a. to the Director and to the 24-hour storm water hotline by telephone no later than 5:00 P.M. on the same business day;
   b. if the release occurs after 5:00 P.M. on a weekday, on a weekend or holiday, to the 24-hour storm water hotline on the same day and to the Director by telephone on the next business day;

c. a written notification of the release shall also be made to the Director within ten business days of the release. A copy of the written notice shall be retained at the premises for at least three (3) years. The notification shall include a detailed written report describing the cause of the discharge, corrective action taken and measures to be taken to prevent future occurrences, and measures taken to remediate the effects of the discharge. Such notification shall not relieve the discharger or permittee from liability or fines incurred as a result of the uncontrolled discharge.

3. In addition to the above requirements, the release of any hazardous materials or substances, sewage, oil, or petroleum to any waters of the state, or discharged or deposited where it is or probably will be discharged in or on any waters of the state, shall be reported to the State Office of Emergency Services, as required by Sections 13271 and 13272 of California Water Code.

8.28.034 Control of Runoff Required – Industrial and Commercial Facilities

A. Prohibited discharges from industrial or commercial activity. Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. The following discharges from industrial or commercial activities are prohibited unless the discharge is in compliance with a NPDES permit:

1. Discharge of wash waters to the storm drain system from the cleaning of gas stations, auto repair garages, or other types of auto repair facilities;
2. Discharge of wastewater to the storm drain system from mobile auto washing, steam cleaning, mobile carpet cleaning, or other such mobile commercial and industrial operations;
3. Discharge to the storm drain system from areas where repair of machinery and equipment, including motor vehicles, which are visibly leaking oil, fluids or coolants is undertaken;
4. Discharge to the storm drain system from storage areas for materials containing grease, oil, or
hazardous materials, or from uncovered receptacles containing hazardous materials, grease, or oil;
5. Discharge of commercial/public swimming pool filter backwash to the storm drain system;
6. Discharge from the washing of toxic materials from paved or unpaved areas to the storm drain system;
7. Discharge from the washing out of concrete trucks to the storm drain system; and
8. Discharge from the washing or rinsing of restaurant mats, equipment or garbage bins or cans in such a manner that causes non-stormwater to enter the storm drain system.

B. Industrial/commercial facility sources required to obtain a NPDES permit. Any industrial or commercial facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

C. Best management practices for industrial and commercial facilities. All industrial and commercial facilities shall implement BMPs which will effectively prevent the direct or indirect discharge of pollutants to the storm drain system or receiving waters to the maximum extent practicable. Minimum BMPs applicable to all industrial and commercial facilities include, but are not limited to:

1. Termination of all non-stormwater discharge to the storm drain system that is not specifically authorized by a NPDES permit;
2. Exercising general good housekeeping practices;
3. Incorporating regular scheduled preventative maintenance into operations;
4. Maintaining spill prevention and control procedures;
5. Implementing soil erosion control;
6. Posting on-site private storm drains to indicate that they are not to receive liquid, solid wastes or pollutants;
7. Implementing regular cleaning of the on-site private storm drain system; and
8. Insuring that stormwater runoff is directed away from operating, processing, fueling, cleaning and storage areas.

8.28.035 Control of Runoff Required – Municipal Facilities

A. Public facility sources required to obtain a NPDES permit. Any public facility required to have a NPDES permit shall retain on-site and, upon request, make immediately available to the director the following documents as evidence of compliance with permit requirements, as applicable:

1. A copy of a NPDES permit or notice of intent to comply with a general permit to discharge stormwater associated with industrial or construction activity as submitted to the state board or report of waste discharge as submitted to a regional board of jurisdiction;
2. A waste discharge identification number issued by the state board or copy of the NPDES permit issued by a regional board;
3. A SWPPP and a monitoring program plan or group monitoring plan;
4. Stormwater quality data; and
5. Evidence of facility self-inspection.

8.28.040 Control of Runoff Required – Construction Activity

A. Stormwater and runoff pollution mitigation for construction activity. No person shall commence any construction activity for which a permit is required by this Chapter or any

law or regulation without implementing all stormwater and runoff pollution mitigation measures required by such permit(s), law, regulation or this Chapter. In addition to any other requirements set forth in this Chapter, prior to obtaining a grading or building permit, each operator of any construction activity shall submit evidence to the Director that all applicable permits have been obtained, including but not limited to the General Construction Activities Storm Water Permit and State Water Board 401 Water Quality Certification.

B. No grading permit shall be issued for any development with a disturbed area of one (1) acre or greater or which is part of a larger common plan of development unless the applicant can show that (i) a Notice of Intent to comply with the State Construction Activity Storm Water Permit has been filed and (ii) a Storm Water Pollution Prevention Plan has been prepared. The City may adopt regulations establishing controls on the volume and rate of stormwater runoff from new developments and redevelopments of less than one (1) acre as may be appropriate to minimize the discharge and transport of pollutants.

C. Prior to obtaining a grading or building permit, each operator of any construction site of less than one (1) acre shall cause to be prepared and submitted to the City an erosion and sediment control plan which satisfies the requirements of the Permit, to ensure that discharges of pollutants are effectively prohibited and will not cause or contribute to an exceedance of water quality standards. A SWPPP prepared in accordance with the General Construction Permit may be substituted for an erosion and sediment control plan. No operator of any construction activity shall commence any construction activity prior to receiving written approval of the erosion and sediment control plan from the Director.

D. Best management practices for construction activity. All BMPs required as a condition of any NPDES permit for construction activity granted by U.S. EPA, the State Water Resources Control Board, or a regional board or pursuant to this code shall be maintained in full force and effect during the term of the project, unless authorized by the director.

8.28.041 Control of Runoff Required – New Development and Redevelopment

A. Prior to construction of a development, redevelopment or new development project, such project shall be evaluated by the City for its potential to discharge pollutants to the storm drain system or to receiving waters based on its intended land use. Such evaluation shall be conducted in accordance with development planning requirements established by the Regional Board or its Executive Officer, pursuant to the Municipal NPDES Permit. No discretionary permit may be issued for any new development or redevelopment project until the Director finds that the project plans comply with the LID /SUSMP requirements set forth in the Permit and in this Chapter.

B. Once a development, redevelopment or new development project has been evaluated for its potential to discharge pollutants to the storm drain system or receiving waters, the City shall require appropriate BMPs to be implemented during construction

and following project completion. The prescription of BMPs shall be in keeping with Standard Urban Storm Water Mitigation Plan requirements established by the regional board or its executive officer, pursuant to the municipal NPDES permit and with this Chapter.

8.28.050 Stormwater Pollution Control Measures for Development Planning and Construction Activities

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City of Claremont to further define and adopt stormwater pollution control measures, develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, alternative compliance for technical infeasibility from the requirements of the onsite retention requirements, and collect funds for projects that are granted alternative compliance for technical infeasibility. Except as otherwise provided herein, the City of Claremont shall administer, implement and enforce the provisions of this Section.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of Section 8.28.050:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area.

(8) Automotive service facilities of 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(D) Effective Date. The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 became effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;
d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall be in accordance with the City of Claremont's Green Street Policy and the USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
   i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
   ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
b. When, as determined by the City of Claremont, 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:
   i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.
   ii. Locations where seasonal high groundwater is within five (5) to ten (10) feet of surface grade;
   iii. Locations within 100 feet of a groundwater well used for drinking water;
   iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
   v. Locations with potential geotechnical hazards;
   vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.
c. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications and requirements specified in the Los Angeles County Municipal NPDES Permit.

i. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project Site should contact the City of Claremont to determine eligibility.

d. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or

ii. The one-year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

e. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the City of Claremont to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, “Multi-Phased Project” shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(F) Non-Planning Priority Projects. For new development or redevelopment projects not meeting the “Planning Priority Projects” thresholds, but which may potentially have adverse impacts on post-development storm water quality, a site-specific plan including post-construction design, source and/or treatment control to mitigate storm water pollution shall be required where one or more of the following project characteristics exist:

a. Vehicle or equipment fueling areas;
b. Vehicle or equipment maintenance areas, including washing and repair;
c. Commercial or industrial waste handling or storage;
d. Outdoor handling or storage of hazardous materials;
e. Outdoor manufacturing areas;
f. Outdoor food handling or processing;
g. Outdoor animal car, confinement, or slaughter; or
h. Outdoor horticultural activities.

(G) Other Agencies of the City of Claremont. All City of Claremont departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and

Redevelopment projects and report their activities annually to the Director of Community Development.

(H) **Certification.** As a condition for issuing a certificate of occupancy for a new development or redevelopment project the Director, shall require the applicant, facility operators and/or owners, as appropriate, to construct and/or employ all stormwater control BMPs identified in the approved development planning documents and submit a signed certification stating that the project site and all BMPs will be employed and maintained in compliance with the City's LID/SUSMP ordinance and other applicable regulatory requirements until the responsibility for such maintenance is legally transferred.

(I) **Fees.** City Council may establish fees for services provided under this Chapter, as authorized under Sections 66016 and 66018 of the California Government Code.

8.28.060 Violations and Enforcement

A. Enforcement - Director's powers and duties. The director shall have primary responsibility for the enforcement of the regulations in this chapter. The director may enter into agreements with other departments for the purpose of implementing this chapter.

B. Identification for inspectors and maintenance personnel. The director shall provide means of identification to inspectors and storm drain system maintenance personnel which shall identify them as such. Inspectors and storm drain system maintenance personnel shall identify themselves upon request in the performance of their duties under this chapter.

C. Obstructing access to facilities prohibited. No object, whether a permanent structure, a temporary structure, or any object which is difficult to remove, shall be located on any storm drain easement or placed in such a position as to interfere with the ready and easy access to any facility conveying stormwater or runoff as described in this chapter unless authority is granted by the director. Upon notification by the director, any such obstruction shall be immediately removed by the responsible party at no expense to the city, and shall not be replaced.

D. Inspection to ascertain compliance - Access required.

1. The director may inspect in a manner authorized by law, as often as he/she deems necessary, any publicly or privately owned storm drain, storm drain connection, street, gutter, yard, plant, storage facility, building, BMP, NPDES permit, SWPPP, stormwater management plan, construction activity or other facility to ascertain whether such facilities, plans, or protective measures are in place, maintained and operated in accordance with the provisions of this chapter.

2. In the course of such inspection, the director may:

a. Inspect, sample, make flow measurements of any runoff, discharge or threatened discharge;

b. Place on the premises devices for runoff or discharge sampling, monitoring, flow

measuring or metering;
c. Inspect, copy, or examine any records, reports, plans, test results or other information required to carry out the provisions of this chapter, to the extent allowed by law; and
d. Photography any materials, storage areas, waste, waste containers, BMP, vehicle, connection, discharge, runoff and/or violation discovered during an inspection.

E. Interference with inspector prohibited. No person shall, during reasonable hours, refuse, restrict, resist or attempt to resist the entrance of the director into any building, factory, plant, yard, construction project or other place or portions thereof in the performance of his/her duty within the powers conferred upon him/her by law.

F. Notice to correct violations - Director may take action. The director may issue a notice of violation and order to comply to achieve compliance with the provisions of this chapter. Failure to comply with the terms and conditions of a notice of violation and order to comply shall constitute a violation of this chapter. If a person fails to comply with an order issued under this section to remove an illicit connection, obstruction or other encroachment to the storm drain system, the director may perform the work as provided in Section 8.28.060 H. of this chapter. The person responsible for installing or operating such a facility shall be liable to the city for the cost of such work, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

G. Violation a public nuisance. Any discharge in violation of this chapter, any illicit connection, and/or any violation of runoff management requirements shall constitute a threat to public health and safety and is declared and deemed a public nuisance.

H. Nuisance abatement - Costs. Whenever a nuisance shall be found to exist on any premises, the director may summarily abate such nuisance upon determination that the nuisance constitutes an immediate threat to public health or safety, or the director may notify in writing the person(s) having control of or acting as agent for such premises to abate or remove such nuisance within such time as is stated on the notice. Upon the failure or refusal of such person(s) to comply with the notice, the director may abate such nuisance in the manner provided by law. The person(s) having control of such premises, in addition to the penalties provided by this chapter, shall be liable to the city for any costs incurred by the city fur such abatement, including reasonable attorneys' fees and other costs of enforcement, to be recovered in a civil action in any court of competent jurisdiction.

I. Violation - Penalty. Any person violating any provision of this chapter shall be guilty of a misdemeanor. Such violation shall be punishable by a fine of not more than $1,000.00 or by imprisonment in the county jail for a period not to exceed six months. Each day during any portion of which such violation is committed, continued or permitted shall constitute a separate offense and shall be punishable as such.

J. Penalties not exclusive. Penalties under this chapter are in addition to, and do not supercede or limit, any and all other penalties or remedies provided by law.

K. Conflicts with other code sections. The provisions of this chapter shall control over any inconsistent or conflicting provisions of this code.

L. Severability. If any portion of this chapter or the application thereof to any person or

circumstance is held invalid, the remainder of this chapter, and the application of such provisions to other persons or circumstances, shall not be affected thereby. (00-07).38.28

SECTION 2. The City Council finds that the adoption of this Ordinance amending the Municipal Code is exempt from the requirements of the California Environmental Quality Act (CEQA) on the basis that (1) State CEQA Guidelines sections 15308 and 15309 each categorically exempt the proposed adoption of the Ordinance since it is an action taken to protect natural resources and the environment (specifically, water quality within the watershed under the jurisdiction of the Los Angeles Regional Water Quality Control Board), and environmental considerations have been accounted for insofar as the entirety of the proposed Ordinance is environmentally beneficial and would have no indirect adverse environmental effects; and (2) the proposed Ordinance is not a "project" pursuant to CEQA since it can be seen with certainty that no adverse effect on the physical environment would occur pursuant to the proposed Ordinance since the only effects on the environment would be to improve water quality in stormwater channel discharges, and these effects are beneficial, and not adverse (see State CEQA Guidelines section 15061(b)(3)). City staff is directed to file a Notice of Exemption with the County Clerk within five (5) working days of the adoption of this Ordinance.

SECTION 3. The Mayor shall sign this ordinance and the City Clerk shall attest and certify to the passage and adoption of it, and within fifteen (15) days, publish in the Claremont Courier, a semi-weekly newspaper of general circulation, printed, published and circulated in the City of Claremont, and thirty (30) days thereafter it shall take effect and be in force.

PASSED, APPROVED and ADOPTED this ______ day of _____________, 2014.

____
Mayor, City of Claremont

ATTEST:

____
City Clerk, City of Claremont

APPROVED AS TO FORM:

____
City Attorney, City of Claremont

CLAREMONT CITY COUNCIL
Certificate of Action

I, Jamie Costanza, Deputy City Clerk of the City of Claremont, California, hereby certify, under penalty of perjury, that the following is a true and correct copy of action taken by the City Council of the City of Claremont at a regular meeting of said Council held June 24, 2014:

Municipal Separate Storm Sewer System (MS4) Permit; Authorization to Submit Draft Watershed Management Plan (WMP) and Coordinated Integrated Monitoring Plan (CIMP) to the Los Angeles Regional Water Quality Control Board; Amendment to Chapter 8.28 (Stormwater and Runoff Pollution Control of the Claremont Municipal Code; Adoption of the City of Claremont Green Streets Policy
Councilmember Calaycay moved to authorize the submittal of the Draft WMP and CIMP with the Los Angeles Regional Water Quality Control Board, introduced AN ORDINANCE OF THE CITY OF CLAREMONT, CALIFORNIA, AMENDING CHAPTER 8.28 OF TITLE 8 (STORMWATER AND RUNOFF POLLUTION CONTROL) OF THE CLAREMONT MUNICIPAL CODE ESTABLSIHING LOW IMPACT DEVELOPMENT REQUIREMENTS FOR NEW AND REDEVELOPED PROPERTIES, AND UPDATING SAID CHAPTER TO INCORPORATE NEW MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT REQUIREMENTS ASSOCIATED WITH DISCHARGE AND CONNECTION INTO THE STORM DRAIN SYSTEM, AND CONTROL OF STORMWATER AND NON-STORMWATER RUNOFF; waived further reading, placed the Ordinance on first reading, referred the Ordinance to the City Attorney for not less than five days, and direct staff to publish a summary of the Ordinance in the local newspaper; adopted Resolution No. 2014-53, A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLAREMONT, CALIFORNIA, ADOPTING THE CITY OF CLAREMONT GREEN STREETS POLICY; and allowed the City of Claremont logo to be affixed to the letter presented by the League of California Cities and California Contract Cities, thereby supporting the use of California Water Bond funding for stormwater and urban runoff projects, seconded by Councilmember Pedroza, and carried on a roll call vote as follows:

AYES: ***Councilmember – Calaycay, Lyons, Nasiali, Pedroza, Schroeder***
NOES: ***Councilmember – None***
ABSENT: ***Councilmember – None***

Executed this 26th day of June, 2014, at Claremont, California.

Jamie Costanza

Jamie Costanza
Deputy City Clerk
City of Claremont

City of La Verne Green Streets Policy-Draft

Purpose

The City of La Verne shall consider implementing green street BMPs for transportation corridors associated with new and redevelopment street and roadway projects. This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that can provide water quality improvement by preventing stormwater runoff through the use of vegetated facilities. Through the use of infiltration, biofiltration and storage mechanisms, a green street can provide water quality benefits, replenish groundwater, create attractive streetscapes, connect neighborhoods, create parks and wildlife habitats, and provide pedestrian and bicycle access.

Policy

A. Application. The City of La Verne shall require that new public and private construction of 10,000 sq. ft. or more of impervious surface area and road development that results in the creation or addition or replacement of 5,000 sq. ft. or more of impervious surface area on an already developed site consider green street implementation. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of La Verne shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs for both private and public projects.

C. Best Management Practices (BMPs). The City of La Verne shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the City of La Verne for use in public and private developments.

D. Retrofit Scope. The City of La Verne shall use the City's Watershed Management Program or Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of La Verne shall incorporate aspects of green streets into internal annual staff trainings.

Exhibit A – Ordinance No. XXXX
City of La Verne Zoning Amendment Case No. XXX-XXZA
Amending Title 13 to add Chapter 13.60

Low Impact Development

Title 13 of the La Verne is hereby amended to add the following Chapter:

Chapter 13.60 Low Impact Development

13.60.010 Title

This Chapter shall be known as the “City of La Verne Low Impact Development (LID) Ordinance” and may be so cited.

13.60.020 Purpose

It is the purpose of this chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development toward existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts for stormwater runoff on the biological integrity of Natural Drainage Systems and the Beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMP's), (including Source Control BMP's such as good housekeeping practices), LID Strategies, and Treatment Control BMP's.

F. Properly select, design and maintain LID and Hydromodification Control BMP's to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMP's to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

    1. On-site infiltration bioretention and/or rainfall harvest and use.

    2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

13.60.030 Findings

The City of La Verne hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City have the potential, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stromwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

13.60.040 Definitions

Except as specifically provided herein, any term used in this Chapter shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this Chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this Chapter.

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater.

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments.

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged t the receiving water.

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as

used in this Chapter is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMP's with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMP's include bioretention systems with an underdrain and bioswales.

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum two (2) foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with as overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration.

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

"City" means the City of La Verne.

"City Engineer" means the City Engineer for the City of La Verne.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line of grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading, or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan.

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

"Conveyance Facility" means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

"Design Engineer" means the registered professional engineer responsible for the design of the stormwater management plan.

"Detention System" means a system, which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit, or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately project public health and safety.

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

"Director" means the Director of Public Works for the City of La Verne.

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation.

"Engineered Site Grading Plan" means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and proposed stormwater management and measures which are prepared to ensure that the objectives of this Chapter are met.

"Flow-through BMP's" means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board, which authorizes the discharge of stormwater from construction activities under certain conditions.

“General Industrial Activities Storm Water Permit (GIASP)” means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

“Grading” means any stripping, excavation, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

“Green Roof” means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall that is intercepted by vegetation leaves through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof systems planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

“Hazardous Material(s)” means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

“Hillside” means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

“Hydromodification” means the alteration of a natural drainage system through a change in the system’s flow characteristics.

“Impervious Surface” means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

“Industrial Park” means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry uses.

“Infiltration BMP” means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMP’s include infiltration basins, dry wells, and pervious pavement.

“LID” means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff.

“Maximum Extent Practicable or MEP” means the extent, which the City can reduce, the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMP’s, and rejecting applicable BMP’s only where: other effective BMP’s will serve the same purpose, the BMP’s would not be technically feasible; or the cost would be prohibitive. Factors considered include, but are not limited to:

A. Effectiveness: Whether the BMP addresses a pollutant of concern.

B. Regulatory Compliance: Whether the BMP complies with storm water regulation, as well as other environmental regulations.

C. Public Acceptance: Whether the BMP has public support.

D. Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved.

E. Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources.

“MS4” means Municipal separate Storm Drain Sewer System (MS4). The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

A. Owned or operated by a State, City, Town, Borough, County, Parish, District, Association, or other public body (created by to pursuant to State Law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State Law such as sewer districts, flood control district or drainage districts, or similar entity, or an Indian Tribe or an authorized Indian Tribal Organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

B. Designed or used for collecting stormwater;

C. Which is not a combined sewer; and

D. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

“National Pollutant Discharge Elimination System (NPDES)” means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Sections 307, 402, 318, and 405. The term includes an “approved program”.

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.

"New Development" means land disturbing activities, structural development, including construction or installation of a building or structure, creation of impervious surfaces, and land subdivision.

"Non-stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater.

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for business, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

"Planning Priority Projects" means development projects subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

1. Commercial and industrial waste such as: fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge.

2. Metals such as: cadmium, lead, zinc, copper, silver, nickel, chromium, and non-metals such as phosphorus and arsenic.

3. Petroleum hydrocarbons such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease.

4. Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

5. Animal wastes such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities.

6. Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

"Public Works Department" means the City of La Verne Public Works Department.

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA.

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses.

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged.

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of a facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils.

"Retention" means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands, and in which water is removed through infiltration and/or evaporation processes.

"Routine Maintenance" routine maintenance projects include, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

2. Perform as needed restoration work to preserve the original design grade, integrity, and hydraulic capacity of flood control facilities.

3. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such project results in increased capacity.

5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.
*Update existing lines includes replacing existing lines with new materials or pipes.
**New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

"Sediment" means mineral or organic matter that has been removed from its site of origin by the process of soil erosion, is in suspension in water, or is being transported.

"Significant Ecological Areas (SEA's)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity. Areas are designated as SEA's, if they possess one or more of the following criteria:

A. The habitiat of rare, endangered, and threatened plant and animal species.

B. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

C. Biotic communities, vegetative associations, and habitat of plant and animal species that are wither one of a kind or are restricted in distribution in Los Angeles County.

D. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

E. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in population or community.

F. Areas important as game species habitat or as fisheries.

G. Areas that would provide for preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

H. Special Areas.

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

"Storm Drain System" means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose to collecting, storing, transporting, or disposing of stormwater and are located within the City of La Verne.

"Storm Water or Stormwater" means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in it's meaning, this term may be spelled or written as one word or two separate words.

"Stormwater Runoff" means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

"SUSMP" means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES permit Order No. 01-183, NPDES No. CAS004001, and required plans that designate best management practices (BMP's) that must be used in specified categories of development projects.

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

"Water Quality Design Storm Event" means any of the volumetric or flow rate based design storm events for water quality BMP's identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

13.60.050 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this chapter are complex in nature. Effort has been made to simplify terms the extent the subject matter permits.

13.60.060 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No.

R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more of surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City's Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharge directly to a Significant Ecological Area (SEA), where the development will:

    i. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

    ii. Create 2,500 square feet of impervious surface area.

11. Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

    i. Conserve natural areas.

    ii. Protect slopes and channels.

    iii. Provide storm drain system stenciling and signage.

    iv. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

    v. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development.

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, which does not disturb additional area and maintains the original grade and alignment, is considered a routine

maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwellings and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

13.60.070 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 13.60.060 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) on-site through:

   1. Minimizing the impervious surface area; and

   2. Controlling runoff form impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

13.60.080 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvesting and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltrantion systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration sue to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site, as calculated by Equation 1 below:

   Equation 1:
   Bv= 1.5 * [SWQDv - Rv]

   Where:

   Bv = Biofiltration volume

SWQDv = The stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater

Rv = Volume reliably retained on-site

B. Offsite infiltration – Use Infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:

Mv = 1.0 * [SWQDv - Rv]

Where:

Mv = Mitigation volume

SWQDv = The volume of stormwater runoff reliably retained on-site.

C. Offsite Projects – Retrofit existing Development – Use infiltration, bioretention, rainfall harvesting and use and/or biofiltration BMPs to retrofit an existing development, with similar and uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stromwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

13.60.090 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

   1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting

forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If the City Engineer determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, the City Engineer shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

B. If the plan is approved, the City will require the following:

1. The applicant shall provide copies of all necessary State, Federal, or local permits relating to stormwater management to the City.

2. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request by the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Recorder prior to issuance of occupancy.

3. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred: and either:

   i. A signed statement from the pubic entity assuming responsibility for BMP maintenance; or

   ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct an maintenance inspection at least once a year; or

   iii. Written text in project covenants, conditions, and restrictions (CC&R's) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association.

4. The applicant shall post cash or a letter of credit in an amount determined by the City Engineer up to 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

5. This deposit shall be returned to the applicant (in case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

6. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm and stormwater BMP's shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

13.60.100 Plan Review Fees

The City Council from time to time shall establish by resolution filing fees for applications, which shall be paid to the City at the time of filing. No application shall be considered filed until the established fees have been paid to the City. No fee will be required in the case of proceedings initiated by either the Council or Planning Commission.

13.60.110 Maintenance Agreement

A. Maintenance Agreement Required – A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMP's which meet the performance standards provided in the this section and identified in the Los Angeles County Municipal Storm Water Permit No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

B. Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMP's shall be undertaken.

C. Maintenance Agreement Provisions shall include:

   1. The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMP's, with a detailed annual estimated budget for the initial two (2) years, and a clear statement

that only future maintenance activities in accordance with the Maintenance Agreement shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement shall be provided by the party responsible for maintenance to the City at least 14 days in advance of commencing work.

2. The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMP's.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violation, as a public nuisance, pursuant to the procedures set forth in Chapter 1.04.120 of the La Verne Municipal Code.

D. A fully executed "Maintenance Covenant for Permanent BMP's Requirements" shall be recorded with the Los Angeles County Clerk and be submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant document shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMP's for post construction. The information to be provided for this exhibit shall include but not be limited to:

1. 81/2" x 11" exhibits with recorded property owner information.

2. Types of BMP's (i.e. site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without property owner being aware of the ramifications to BMP implementation.

3. A plan that clearly depicts location of BMP's, especially those located below grade.

4. A matrix depicting the types of BMP's, frequency of inspection, type of maintenance required, and if proprietary BMP's, the company information to perform the necessary maintenance.

5. Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.

6. Understanding the documentation of proper maintenance must be presented to the City upon request.

13.60.120 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provision of Chapter 1.24 of the La Verne Municipal Code.

13.60.130 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participation in the work.

13.60.140 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

13.60.150 Emergency Measures

When emergency measures are necessary to moderate a nuisance, to protect public safety, heath and welfare, and/or prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all such costs.

13.60.160 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

City of Pomona
Green Streets Policy

Purpose

The City of Pomona shall implement green street Best Management Practice (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff while also providing design elements that creates attractive streetscapes. Green Streets can foster unique and attractive streetscapes that protect and enhance neighborhood livability and integrate, rather than separate, the built and natural environments. Green Streets encourage the planning of landscapes and vegetation. City landscapes and trees contribute environmental benefits such as reduced summer air temperatures, reductions in global warming through carbon sequestration, air pollution screening, and wildlife habitat corridors, in addition to stormwater surface runoff reduction.

Policy

A. Application. The City of Pomona shall require new development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are major arterials as defined in the City's General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are substantially maintained.

B. Amenities. The City of Pomona shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The City of Pomona shall use the City of Los Angeles Green Streets Guidance, USEPAs *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Street* or equivalent guidance developed by the City of Pomona for use in public and private developments.

D. Retrofit Scope. The City of Pomona shall use the City's Watershed Management Program to identify opportunities for Green Street BMP retrofits. Final decisions regarding

implementation will be determined by the Public Works Director and/or designee based on the availability of adequate funding.

E. Outreach. The City of Pomona shall educate citizens, businesses, and the development community/industry about Green Streets and how they can serve as urban gateways to enhance, improve, and connect neighborhoods to encourage support, demand and funding for these projects.

F. Training. The City of Pomona shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

WHEREAS, the City is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity;

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175 ("MS4 Permit"), issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Pomona; and

WHEREAS, to comply with the mandates of the MS4 Permit, the City shall adopt a Low Impact Development (LID) ordinances.

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Pomona, California, as follows:

SECTION 1. That Ordinance No. 4006, also known as the Pomona City Code, is hereby amended to include the addition of Article VI, "Low Impact Development" to Chapter 74, "Buildings and Building Regulations" as follows:

ARTICLE VI. LOW IMPACT DEVELOPMENT

DIVISION 1. GENERALLY

Sec. 74-310. Title.

This Ordinance shall be known as the "City of Pomona Low Impact Development (LID) Ordinance" and may be so cited.

Sec. 74-311. Findings.

The City of Pomona finds that:

(1) Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

(2) Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased non-point source pollutant loading to the receiving waterbodies and the beaches.

(3) Stormwater runoff produced by land development contributes to increased quantities of waterborne pollutants.

(4) Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed and the Santa Ana River Watershed.

(5) Increase stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

(6) Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

(7) Adopting the standards, criteria, and procedures contained in this Article and implementing the same will address many of the deleterious effects of stormwater runoff.

Sec. 74-312. Purpose.

The provisions of this Article are adopted pursuant to the Federal Water Pollution Control Act, also known as the "Clean Water Act," codified and amended at 33 U.S.C. 1251 *et seq*. The intent of this Article is to enhance and protect the water quality of the receiving waters of the United States in a manner that is consistent with the Clean Water Act (and acts amendatory thereof or supplementary thereto), applicable implementing regulations, and the Municipal NPDES permit (as defined below, and any amendment, revision, or re-issuance thereof). It is the purpose of this Article to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

(1) Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

(2) Minimize the adverse impacts from stormwater runoff on the biological integrity of natural drainage systems and the beneficial uses of waterbodies.

(3) Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration, and rainfall harvest and use.

(4) Maintain existing riparian buffers and enhance riparian buffers when possible.

(5) Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs, defined below) including Source Control BMPs such as good housekeeping practices, LID strategies, and Treatment Control BMPs.

(6) Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

(7) Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

(a) On-site infiltration, bioretention and/or rainfall harvest and use.

(b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

Sec. 74-313. Definitions.

The following terms, phrases, words, and derivatives shall have the meaning defined below:

Basin Plan means the Water Quality Control Plan, Los Angeles Region, Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and any subsequent amendments.

Beneficial Use means the existing or potential use of receiving waters as designated by the Los Angeles or Santa Ana Regional Water Quality Control Boards in their respective basin plans for the County.

Best Management Practices or BMPs are practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water.

City means the City of Pomona.

City Engineer means the City Engineer for the City of Pomona.

Conveyance Facility means a storm drain, pipe, swale, or channel used to collect and direct stormwater.

Design Engineer means the registered professional engineer responsible for the design of the stormwater management plan.

Detention System means a system which is designed to capture stormwater and release it over a given period of time through an outlet structure at a controlled rate.

Development means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Director means the Director of Public Works for City of Pomona.

Discharge means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Disturbed Area means an area that is altered as a result of clearing, grading, or excavation.

Engineered Site Grading Plan means a scaled drawing or plan and accompanying text prepared by a registered engineer or landscape architect which shows alteration of topography, alterations of watercourses, flow directions of stormwater runoff, and propose stormwater management and measures which are prepared to ensure that the objectives of this Article are met.

Grading means any stripping, excavating, filling, and stockpiling of soil or any combination thereof and the land in its excavated or filled condition.

Hardscape means any durable, pervious or impervious surface material, including paving for pedestrians and vehicles.

Hydromodification means the alteration of a natural drainage system through a change in the system's flow characteristics.

Impervious Surface means a surface that does not allow stormwater runoff to slowly perchlorate into the ground.

Low Impact Development or LID means technologies and practices that are part of a sustainable stormwater management strategy that controls, retains or filters stormwater and urban runoff on site.

Maximum Extent Practicable or *MEP* means the extent to which the City can reduce the discharge of pollutants in stormwater runoff. MEP requires selecting and implementing effective BMPs, and rejecting applicable BMPs only where: (i) other effective BMPs will serve the same purpose; (ii) the BMPs would not be technically feasible; or (iii) the cost would be prohibitive. Factors considered include, but are not limited to:

(1) Effectiveness: Whether the BMP addresses a pollutant of concern

(2) Regulatory Compliance: Whether the BMP complies with storm water regulations, as well as other environmental regulations

(3) Public acceptance: Whether the BMP has public support

(4) Cost: Whether the cost of implementing the BMP has a reasonable relationship to the pollution control benefits achieved

(5) Technical Feasibility: Whether the BMP is technically feasible, considering soils, geography, and water resources

Municipal NPDES Permit means California Regional Water Quality Control Board, Los Angeles Region, Order No. R4-2012-0175, NPDES Permit No. CAS004001 Waste Discharge Requirements For Municipal Separate Storm Sewer System (MS4) Discharge Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach MS4, and any amendment thereto or re-issuance thereof.

Municipal Separate Storm Sewer System (referred to herein as "MS4"), means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(1) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved

management agency under section 208 of the CWA that discharges to waters of the United States;

(2) Designed or used for collecting or conveying stormwater;

(3) Which is not a combined sewer; and

(4) Which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR Section 122.2.(40 CFR Section 122.26(b)(8)).

Natural Drainage System means any unlined or unimproved (not engineered) creek, stream, river, or similar waterway.

Non-storm Water Discharge means any fluid discharge to the storm drain system and/or receiving waters that is not composed entirely of storm water but may not necessarily be an illicit discharge.

NPDES or *National Pollutant Discharge Elimination System* means the national permitting program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Clean Water Act (CWA) §307, 402, 318, and 405. The term includes an "approved program."

Mandated by Congress under the Clean Water Act, the NPDES Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges which adversely affect the quality of our nation's waters. The program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

Pollutants of Concern means chemical, physical, or biological components of stormwater that impair the beneficial uses of receiving waters, including those defined in Section 502(6) of the Federal Water Pollution Control Act ("Clean Water Act," 33 U.S.C. Section 1362(6)), and incorporated by reference into California Water Code Section 13373.

Public Works Department means the City of Pomona Public Works Department.

Receiving Water means a "water of the United States" (as defined in 33 C.F.R. section 328.3(a)(7)) into which waste and/or pollutants are or may be discharged.

Retention means a holding system for stormwater, either natural or man-made, which does not have an outlet to adjoining watercourses or wetlands and in which water is removed through infiltration and/or evaporation processes.

Runoff means any runoff including stormwater and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically comprised of base flow (either contaminated with pollutants or uncontaminated) and nuisance flows.

Sediment means mineral or organic particulate matter that has been removed from its site of origin by the processes of soil erosion, is in suspension in water, or is being transported.

Standard Industrial Classification (SIC) means a classification pursuant to the current edition of the Standard Industrial Classification Manual issued by the Executive Office of the President of the United States, Office of Management and Budget, and as the same may be periodically revised.

Storm Drain means a conduit, pipe, swale, natural channel, or man-made structure which serves to transport stormwater runoff. Storm drains may be either enclosed or open.

Stormwater means runoff that occurs as the result of rainfall.

Stormwater Quality Design Volume (SWQDv) means the runoff generated by the greater of either:

(1) The 0.75-inch, 24-hour rain event; or

(2) The 85th percentile, 24-hour rain event, as determined from the *Los Angeles County Department of Public Works 85th Percentile Precipitation Isohyetal Map*.

Urban Runoff means surface flows, other than stormwater, emanating from development.

Water Quality Design Storm Event means any of the volumetric or flow rate based design storm events for water quality BMP's identified in the National Pollutant Discharge Elimination System Municipal Stormwater Permit for the County of Los Angeles.

DIVISION 2. NEW DEVELOPMENTS AND REDEVELOPMENT PROJECTS PROVISIONS

Sec. 74-314. Applicability.

These procedures and standards set forth in this Article, the BMP design information found in the Los Angeles County Municipal Storm Water Permit, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the City of Pomona's authority to adopt and publish or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) All development projects equal to one (1) acre or greater of disturbed area and adding more than ten thousand (10,000) square feet of impervious surface area;

(2) Industrial parks ten thousand (10,000) square feet or more of surface area;

(3) Commercial malls ten thousand (10,000) square feet or more of surface area;

(4) Retail gasoline outlets five thousand (5,000) square feet or more of surface area.

(5) Restaurants (SIC 5812) five thousand (5,000) square feet or more of surface area;

(6) Parking lots five thousand (5,000) square feet or more of impervious surface area, or with twenty-five (25) or more parking spaces;

(7) Street and road construction of ten thousand (10,000) square feet or more of surface area shall follow the City of Pomona Green Street Policy to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects;

(8) Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with five thousand (5,000) square feet or more of surface area;

(9) New development projects located in or directly adjacent to, or discharging directly to the proposed Significant Ecological Area ("SEA") which will:

(a) discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

(b) create two thousand five hundred (2,500) square feet or more of impervious surface area; and

(10) Redevelopment Projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below;

(11) Redevelopment projects located in or within 200 ft. of, or discharging directly to a Significant Ecological Area (SEA) where the development will:

(a) Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

(b) Create 2,500 square feet or more of impervious surface area.

(12) Single-family hillside homes. During the construction of a single-family hillside home, the following measures shall be considered to the maximum extent practicable:

(a) Conserve natural areas.

(b) Protect slopes and channels.

(c) Provide storm drain system stenciling and signage.

(d) Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

(e) Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Article for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

(1) Land disturbing activity that results in the creation or addition or replacement of five thousand (5,000) square feet or more of impervious surface area on an already developed site.

(2) Redevelopment project that result in an alteration to more than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site.

(3) Redevelopment project that result in an alteration of less than fifty perfect (50%) of impervious surfaces of an existing development which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire project site.

(4) Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

(5) Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace Ten Thousand (10,000) square feet of impervious surface area.

Sec. 74-315. Project Performance Criteria.

All development projects that fit the project criteria listed above in Section 74-331 of this Article shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume (SWQDv) (as defined in definitions) on-site through:

(1) Minimizing the impervious surface area; and

(2) Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

Sec 74-316. Alternative Compliance for Technical Infeasibility.

(a) To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain one hundred percent (100%) of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and the compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

(b) When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use. Alternative compliance measures include the following:

(1) On-Site Biofiltration. Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the

portion of the SWQDv that is not reliably retained on site, as calculated by Equation 1 below:

Equation 1:
Bv=1.5* [SWQDv-Rv)
Where:
Bv = Biofiltraton volume
SWQDv= the stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater
Rv=volume reliably retained on-site

(2) Off-site Infiltration. Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the SWQDv, less the volume or stormwater runoff reliably retained on-site, at an approved offsite project. The required off-site mitigation volume shall be calculated by Equation 2 below:

Equation 2:
Mv=1.0*[SWQDv-Rv]
Where:
Mv=Mitigation Volume
SWQDv=Runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater
Rv=the volume of stormwater runoff reliably retained on-site

(3) Offsite Project. Retrofit existing Development. Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable of higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order N. R4-2012-0175, and any amendment, revision, or reissuance thereof.

(4) Other alternative compliance requirements are detailed in the Los Angeles County Municipal Stormwater Permit Order No. R4-2012-0175.

(c) Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles Municipal Storm Water Permit Order N. R4-2012-0175, and the County of Los Angeles Department of Public Works Low Impact Development Standards Manual (February 2014), and any amendment, revision, or reissuance thereof.

Secs. 74-317 – 74-330. Reserved.

DIVISION 4. PLAN REVIEW REQUIREMENTS, FEES, AND MAINTENANCE

Sec. 74-331. Review Procedures.

(a) All stormwater plans shall be subject to review and approval by the City Engineer.

(1) If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding a recommendation or approval, and will state the changes necessary to obtain approval.

(2) If Staff determines that all of the required information has not been received, the proprietor may request additional time to allow for the submittal of the required information.

(3) If all of the required information has been received, Staff shall recommend approval, recommend approval with conditions, or recommend denial of the Stormwater Plan.

(a) If the Plan is approved, the City will require the following:

(1) The applicant will provide copies of all necessary state, federal, or local permits relating to the Project for Stormwater Management to the City.

(2) A satisfactory Maintenance Covenant Agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The Maintenance Covenant shall include a listing of the BMPs, locations, and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain records for a period of two (2) years. Maintenance Agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk prior to issuance of occupancy.

(3) A satisfactory Maintenance Covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred, and either:

- A signed statement from the public entity assuming responsibility for BMP maintenance; or
- Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or
- Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association (HOA). Residential development with HOAs shall include a Stormwater Pollution Prevention Plan and compliance elements in the CCRs.

Sec. 74-332. Review Fees.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of Pomona including the costs of on-site inspections.

Sec. 74-333. Maintenance Agreement Required.

(a) Maintenance Agreement Required. A Maintenance Agreement shall be submitted to the City for review by the City Engineer and his/her designee, and if necessary, City Attorney. The Designers may select any combination of stormwater BMPs which meet the performance standards provided in this section and identified in the Los Angeles County Municipal Storm Water Permit No. R-2012-0175 and any amendment, revision, or reissuance thereof. A formal Maintenance Plan shall be included in the Maintenance Agreement.

(b) Purpose of the Maintenance Agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

(c) Maintenance Agreement Provisions:

(1) The Maintenance Agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPS, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the Maintenance Agreement Plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance not within the scope of the Maintenance Agreement Plan shall be provided by the party responsible for maintenance to the City of Pomona at least 14 days in advance of commencing work.

(2) The Maintenance Agreement and all its covenants shall be binding on all subsequent owners of land served by the stormwater BMPs.

(3) If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Article and/or as required in the approved Maintenance Agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 18 of the Municipal Code.

(d) A fully executed "Maintenance Covenant for Permanent BMPs Requirements" shall be recorded with the Los Angeles County Registrar-Recorder/County Clerk and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include exhibits that detail all of the installed treatment control devices as well as any site design or source control BMPs

for post construction. The information to be provided on this exhibit shall include, but not be limited to:

- 8 ½"x11" exhibits with record property owner information.
- Types of BMPs (i.e., site design, source control, and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.
- Clear depicting of location of BMPs, especially those located below ground.
- A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.
- Agreement to retain documentation of proper maintenance records for a period of two (2) years plus current year.
- Understanding the documentation of proper maintenance must be presented to the City upon request.

Secs. 74-334 – 74.340. Reserved.

DIVISION 5. ENFORCEMENT

Sec. 74-341. Violations.

Any person violating any provisions of this Article shall be responsible for a municipal civil infraction and subject to the City's progressive enforcement policy as detailed in the City Code.

Sec. 74-342. Stop Work Order.

Where there is work in progress that causes or contributes in whole or in part, a violation of any provision of this Article, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Article or to avoid or reduce the effects of non-compliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

Sec. 74-343. Failure to Comply.

In addition to any other remedies, should any owner fail to comply with the provisions of this Article, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

Sec. 74-344. Emergency Measures.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health, and welfare, and/or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Article, and shall promptly reimburse the City for all such costs.

Sec.74-345. Cost Recovery for Damage to Storm Drain System.

A discharger shall be liable for all costs incurred by the City as a result of causing a discharge that produces a deposit or obstruction, or causes damage to or impairs a storm drain, or water quality violation, or violates any of the provisions of this Article. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles and Santa Ana Regional Water Quality Control Boards for violation of an NPDES Permit, attorney fees, and other costs and expenses.

Secs. 74-346 – 74-360. Reserved.

SECTION 2. Any provision of the Pomona City Code that is inconsistent with the provisions of this Ordinance, to the extent of such inconsistencies and no further, are modified to the extent necessary to affect the provisions of this Ordinance.

SECTION 3. If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council of the City of Pomona hereby declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase or portion thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases, or portions be declared invalid or unconstitutional.

SECTION 4. The City Clerk shall certify to the passage and adoption of this ordinance, causing it to be posted as required by law, and it shall be effective thirty (30) days after its adoption.

APPROVED, PASSED AND ADOPTED this 2nd day of June, 2014.

ATTEST: CITY OF POMONA

___________________________ ___________________________

Eva M. Buice, City Clerk Elliott Rothman, Mayor

APPROVED AS TO FORM:

____
Arnold M. Alvarez-Glasman, City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)
CITY OF POMONA)

I, Eva M. Buice, CITY CLERK of the City of Pomona do hereby certify that the foregoing Ordinance was introduced for first reading on _______, 2014 and adopted at second reading at a regular meeting of the City Council of the City of Pomona held on the ___ of ______, 2014 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:
ABSTAIN: COUNCILMEMBERS:

____
Eva M. Buice, MMC City Clerk

14. The City Council introduced, at first reading, **Ordinance No. 4185** of the City of Pomona, California, approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID) Ordinance and adoption of Resolution establishing a Green Street Policy **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL, OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS

DISCUSSION CALENDAR

15. The City Council approved findings of Public Benefit to the Community at Large for the following expenditures: **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY MAYOR ROTHMAN, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT)**

    A) $2900 to the City of Pomona Community Services Department for rental of the City stage and other costs associated with the annual Relay for Life Event

    B) $100 to Garey High School in support of the ROTC Program

    C) $200 to the Pomona Police Department in support of the G.R.E.A.T. Program

    D) $125 to the Pomona Concert Band in support of program expenses

    E) $75 to the Salvation Army in support of the Release Time Education Program

    F) Amount to be determined to Saint Madeleine's Church for expenses associated with their Annual Fiesta

    G) Amount to be determined to the Pomona Police Department in support of the Annual Campout

    H) Amount to be determined for the Holiday Toy Drive

    I) Amount to be determined to Pomona Heritage in support of the Home Restoration Workshop

    J) Amount to be determined to The Kiwanis Club of Pomona in support of June 8th Car Show event

    K) Amount to be determined to the Pomona Youth Orchestra for sound equipment and miscellaneous program expenses

16. The City Council discussed a proposed moratorium and considered creating a Task Force for review of Waste and Recycling facilities Correspondence from Clean & Green Pomona, and Inland Communities Organizing Network was received on May 19th and a copy was provided to each of you on the dais. **MOTION BY COUNCILMEMBER LANTZ, SECOND BY COUNCILMEMBER CARRIZOSA, CARRIED 6-0 (COUNCILMEMBER MARTIN ABSENT) that the item be returned for discussion and directed Staff with recommendations:**
    2) Prepare an Urgency Ordinance declaring a moratorium on new or the expansion of existing waste and recycling facilities for City Council consideration at an upcoming City Council meeting. 3) Establish a task force to examine the public health, safety, and cost of service issues at waste-related and recycling facilities and provide direction on how to staff the task force; the City Council also noted that other businesses will not be considered and that the two existing businesses will be considered until the moratorium is lifted.

RESOLUTION NO. 2014-57

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

RESOLUTION NO. 2014-58

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AUTHORIZING SUBMITTAL OF AN APPLICATION TO THE CALIFORNIA STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT FOR FUNDING UNDER THE CALHOME PROGRAM EXCLUSIVELY FOR MANUFACTURED HOUSING; THE EXECUTION OF A STANDARD AGREEMENT IF SELECTED FOR SUCH FUNDING AND ANY AMENDMENTS THERETO; AND ANY RELATED DOCUMENTS NECESSARY TO PARTICIPATE IN THE CALHOME PROGRAM

5. The City Council adopted, at second reading, Ordinance No. 4185 approving a Code Amendment modifying Land Development Ordinances, Buildings and Building Regulations, Chapter 74, adding Article VI-Low Impact Development (LID). **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

ORDINANCE NO. 4185

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF POMONA, CALIFORNIA, AMENDING ORDINANCE NO. 4006, ALSO KNOWN AS THE POMONA CITY CODE, WITH THE ADDITION OF ARTICLE VI, "LOW IMPACT DEVELOPMENT" TO CHAPTER 74, "BUILDINGS AND BUILDING REGULATIONS"

6. The City Council approved an agreement extension with InfoSend, Inc. for a period of up to nine (9) months, in an amount not to exceed $26,000 plus actual postage costs for the printing, posting, mailing, and Electronic Bill Presentment and Payment (EBPP) services for City utility bills. **MOTION BY COUNCILMEMBER ESCOBAR, SECOND BY MAYOR ROTHMAN, CARRIED 7-0.**

DISCUSSION CALENDAR

7. The City Council made a Finding of Public Benefit to the Community at Large for the following expenditures **MOTION BY COUNCILMEMBER CARRIZOSA, SECOND BY VICE MAYOR NOLTE, CARRIED 7-0**:

   A) Amount to be determined to the Learning Centers at the Fairplex in support of the Fair Kids Yellow Bus Program

   B) Amount to be determined to the Pomona Economic Opportunity Center (PEOC) in support of the "Support the Struggle" fundraiser

   C) Amount to be determined to the Pomona Unified Partners in Education (PUPIL) Foundation in support of the Scholarship luncheon

   D) Amount to be determined to Junior Foundation Charities for their fundraiser event

Green Streets Policy

Purpose

The City of San Dimas (City) shall implement green street Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of San Dimas shall require that new public and private street and road construction of 10,000 square feet or more of impervious surface area and street and road redevelopment that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site consider green street strategies. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of San Dimas shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Best Management Practices (BMPs). The City of San Dimas shall require projects subject to this policy, to include, but not limited to appropriate BMPs as listed below to the maximum extent practicable:

- Planter/tree boxes
- Tree canopy rain interception
- Implementation of alternative street widths
- Infiltration
- Permeable pavement
- Bioswales
- Vegetated curb extensions
- Recycled Asphalt

Additional BMPs are available in the Los Angeles County Low Impact Development (LID) Standards Manual.

D. Retrofit Scope. The City of San Dimas shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the Director of Public Works based on the availability of adequate funding.

E. Training. The City of San Dimas shall incorporate aspects of green streets into internal annual staff trainings.

ORDINANCE NO. 1231

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SAN DIMAS APPROVING LOW IMPACT DEVELOPMENT REQUIREMENTS IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

THE CITY COUNCIL OF THE CITY OF SAN DIMAS DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 14 of the San Dimas Waters and Sewers Code are hereby amended as set forth in attached Exhibit A.

SECTION 2. This Ordinance shall take effect 30 days after its final passage, and within 15 days after its passage the City Clerk shall cause it to be published in the Inland Valley Daily Bulletin, a newspaper of general circulation in the City of San Dimas hereby designated for that purpose.

PASSED, APPROVED AND ADOPTED THIS 24th DAY OF JUNE, 2014.

Curtis W. Morris

Curtis W. Morris, Mayor of the City of San Dimas

ATTEST:

Ken Duran

Ken Duran, City Clerk

I, Ken Duran, City Clerk of the City of San Dimas, do hereby certify that **Ordinance No. 1231** was regularly introduced at the regular meeting of the City Council on June 10th, 2014 and was thereafter adopted and passed at the regular meeting of the City Council held on June 24th, 2014 by the following vote:

AYES:	Badar, Bertone, Templeman, Morris
NOES:	None
ABSENT:	Ebiner
ABSTAIN:	None

I, Ken Duran, City Clerk further certify that within 15 days of the date of its passage, I caused a copy of Ordinance No. 1231 to be published in the Inland Valley Daily Bulletin.

Ken Duran

Ken Duran, City Clerk

EXHIBIT A

Chapter 14.13 Low Impact Development Ordinance No. 1231

Sections:

14.13.010 Title

This Chapter shall be known as the "City of San Dimas Low Impact Development (LID) Ordinance" and may be so cited.

14.13.020 Purpose

It is the purpose of this Chapter to establish minimum stormwater management requirements and controls to accomplish, among others, the following objectives:

A. Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

B. Minimize the adverse impacts from stormwater runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of waterbodies.

C. Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

D. Maintain existing riparian buffers and enhance riparian buffers when possible.

E. Minimize pollutant loadings from impervious surfaces such as roof tops, parking

lots, and roadways through the use of properly designed, technically appropriate Best Management Practices (BMPs), (including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs.

F. Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors.

G. Prioritize the selection of BMPs to remove stormwater pollutants, reduce stormwater runoff volume, and beneficially use stormwater to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

1. On-site infiltration, bioretention and/or rainfall harvest and use.

2. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

14.13.030 Findings

The City of San Dimas (hereinafter referred to as "City" finds that:

A. Waterbodies, roadways, structures, and other property within and downstream of the City are at times subject to flooding.

B. Land development alters the hydrologic response of watersheds, resulting in increased stormwater runoff rates and volumes, increased flooding, increased stream channel erosion, increased sediment transport and deposition, and increased nonpoint source pollutant loading to the receiving waterbodies and the beaches.

C. Stormwater runoff produced by land development contributes to increased quantities of water-borne pollutants.

D. Increases of stormwater runoff, soil erosion, and non-point source pollution have occurred as a result of land development, and have impacted the water resources of the San Gabriel River Watershed.

E. Increased stormwater runoff rates and volumes and the sediments and pollutants associated with stormwater runoff from future development projects within the City will, absent proper regulation and control, adversely affect the City's waterbodies and water resources, and those of downstream municipalities.

F. Stormwater runoff, soil erosion, and non-point source pollution can be controlled and minimized by the regulation of stormwater runoff from development.

G. Adopting the standards, criteria, and procedures contained in this Chapter and implementing the same will address many of the deleterious effects of stormwater runoff.

14.13.040 Construction of Language

For purposes of this Chapter, the following rules of construction apply:

A. Terms not specifically defined in this Chapter shall have the meaning customarily assigned to them.

B. Considering that stormwater management in many cases requires sophisticated engineering design and improvements, some of the terms of this Chapter are complex in nature. Effort has been made to simplify terms to the extent the subject matter permits.

14.13.050 New Development and Redevelopment Project Provisions Applicability

These procedures and standards set forth in this Chapter and the BMP design information found in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof provide minimum standards to be complied with by developers and in no way limit the authority of the City of San Dimas to adopt or publish and/or enforce higher standards as a condition of approval of developments.

A. New Development Projects

Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area.

2. Industrial parks 10,000 square feet or more of surface area.

3. Commercial malls 10,000 square feet or more surface area.

4. Retail gasoline outlets 5,000 square feet or more of surface area.

5. Restaurants 5,000 square feet or more of surface area.

6. Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Street and road construction of 10,000 square feet or more of impervious surface area shall follow the City of San Dimas Green Streets Policy to the maximum extent practicable. Street and road construction applies to streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

8. Automotive service facilities (as referenced by standard industrial classifications in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof) 5,000 square feet or more of surface area.

9. Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part B (Redevelopment Projects) below.

10. Projects located in or within 200 feet of, or discharging directly to a Significant Ecological Area (SEA), such as: San Dimas Canyon / San Antonio Wash where the development will:

a. Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

11. Single-family hillside homes. During the construction of a single family hillside home, the following measures shall be considered to the maximum extent practicable:

a. Conserve natural areas.

b. Protect slopes and channels.

c. Provide storm drain system stenciling and signage.

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability.

e. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

B. Redevelopment Projects

Redevelopment projects subject to conditioning and approval requirements outlined in this Chapter for the design and implementation of post-construction controls to mitigate stormwater pollution prior to completion of the project(s) include:

1. Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site

2. Redevelopment projects that result in an alteration to more than fifty (50) percent of impervious surfaces of an existing development which had not been not subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate the entire project site

3. Redevelopment projects that result in an alteration of less than fifty (50) percent of impervious surfaces of an existing development, which had not been subject to post-construction stormwater quality control requirements at the time of the previous development shall be required to mitigate only the alteration and shall not be required to mitigate the entire development

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

14.13.060 Project Performance Criteria

A. All development projects that fit the project criteria listed in Section 14.13.050 of this Chapter shall control pollutants, pollutant loads, and runoff volume by retaining the Stormwater Quality Design Volume ($SWQD_v$) on-site through:

1. Minimizing the impervious surface area; and

2. Controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

14.13.070 Alternative Compliance for Technical Infeasibility

To demonstrate technical infeasibility, the project applicant shall demonstrate to the City Engineer that the project cannot reliably retain 100 percent of the $SWQD_v$ on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible. This shall be demonstrated by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer and shall be subject to review and approval by the City Engineer.

When evaluating the potential for on-site retention, each applicant shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

Alternative compliance measures include the following:

A. On-site Biofiltration – Biofiltration systems shall meet the design specifications provided in Attachment H of the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof. If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the $SWQD_v$ that is not reliably retained on-site, as calculated by Equation 1 below:

Equation 1:
$B_v = 1.5 * [SWQD_v - R_v]$

Where:

B_v = biofiltration volume

$SWQD_v$ = the stormwater runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, whichever is greater.

R_v = volume reliably retained on-site

B. Offsite Infiltration – Use infiltration or bioretention BMPs to intercept a volume of stormwater runoff equal to the $SWQD_v$, less the volume of stormwater runoff reliably retained on-site, at an approved offsite project. The required offsite mitigation volume shall be calculated by Equation 2 below:

Equation 2:
$M_v = 1.0 * [SWQD_v - R_v]$

Where:

M_v = mitigation volume

$SWQD_v$ = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

R_v = the volume of storm water runoff reliably retained on-site.

C. Offsite Project - Retrofit Existing Development – Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher stormwater runoff event mean concentrations (EMCs) than the new development. The retrofit plan shall be designed and constructed as described in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175, and any amendment, revision, or reissuance thereof.

D. Other alternative compliance requirements are detailed in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175.

E. Applicants and/or designers may select any combination of stormwater BMPs which meet the performance standards provided in this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof.

14.13.080 Plan Review Procedures

A. All Stormwater Plans shall be subject to review and approval by the City Engineer.

1. If the proposed plan is not sufficient as originally submitted, the City Engineer, or his/her designee, will notify the applicant in writing, setting forth the reasons for withholding and will state the changes necessary to obtain approval.

2. If Staff determines that all of the required information has not been received, the applicant may request that the matter be tabled to allow for the submittal of the required information.

3. If all of the required information has been received, Staff shall approve, approve with conditions, or recommend denial of the Stormwater Plan, including waiver submissions. Recommendations for action on the Stormwater Plan can be part of the recommendation for action on the site plan or subdivision plat.

4. If the plan is approved, the City will require the following:

a. The applicant shall provide copies of all necessary state, federal, or local permits relating to stormwater management to the City.

b. A satisfactory maintenance covenant agreement that assures long-term maintenance of all drainage improvements shall be submitted as part of the final plan. The maintenance covenant shall include a listing of the BMP's and their location and required maintenance frequency. The property owner shall be required to document proper maintenance and operations and maintain such records for a period of two (2) years. Maintenance agreements and records shall be provided upon request to the City inspector at any time for compliance verification. Failure to do so will result in enforcement actions per the City Code. The approved covenant shall be recorded with

the Los Angeles County Recorder prior to issuance of occupancy.

c. A satisfactory maintenance covenant shall at a minimum include the developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either:

i. A signed statement from the public entity assuming responsibility for BMP maintenance; or

ii. Written conditions in the sales or lease agreement, which require the property owner or tenant to assume responsibility for BMP maintenance and conduct a maintenance inspection at least once a year; or

iii. Written text in project covenants, conditions, and restrictions (CCRs) for residential properties assigning BMP maintenance responsibilities to the Home Owners Association; or

d. The applicant shall post cash or a letter of credit in an amount not less than 100 percent of the cost of the stormwater facilities. This deposit shall be held for two (2) years after the date of completion of construction and final inspection of the stormwater facilities, until accepted by the City. The percentage cost for cash or letter of credit may be reduced to 10 percent for projects longer than two (2) years.

e. This deposit shall be returned to the applicant (in the case of cash) or allowed to expire (in the case of a letter of credit), as provided above, provided all stormwater facilities are clean, unobstructed, and in good working order, as determined by the City Engineer.

f. Reproducible mylars and electronic files (in AutoCAD format) of the as-built storm drains and stormwater BMPs shall be submitted by the applicant or his/her engineer to the City along with the final plan, or upon completion of system construction. The mylars are to be of quality material and three mils in thickness. Complete development agreements (including deed restrictions) must be submitted for the City's review and approval prior to recording.

Fees and escrow account payments shall be sufficient to cover administrative and technical review costs anticipated to be incurred by the City of San Dimas including the costs of on-site inspections, as set forth by resolution of the City Council.

14.13.100 Maintenance Agreement

A. Purpose of Maintenance Agreement

The purpose of the maintenance agreement is to provide the means and assurance that maintenance of stormwater BMPs shall be undertaken.

B. Maintenance Agreement Required

1. A maintenance agreement shall be submitted to the City, for review by the City Engineer and his/her designee and, if necessary, City Attorney. The Designers may

select any combination of stormwater BMPs which meet the performance standards provided this selection and identified in the Los Angeles County Municipal Storm Water Permit Order No. R4-2012-0175 and any amendment, revision, or reissuance thereof. A formal maintenance plan shall be included in the maintenance agreement.

C. Maintenance Agreement Provisions

1. The maintenance agreement shall include a plan for routine, emergency, and long-term maintenance of all stormwater BMPs, with a detailed annual estimated budget for the initial two (2) years, and a clear statement that only future maintenance activities in accordance with the maintenance agreement plan shall be permitted without the necessity of securing new permits. Written notice of the intent to proceed with maintenance shall be provided by the party responsible for maintenance to the City of San Dimas at least 14 days in advance of commencing work.

2. The maintenance agreement shall be binding on all subsequent owners of land served by the stormwater BMPs.

3. If it has been found by the City, following notice and an opportunity to be heard by the property owner, that there has been a material failure or refusal to undertake maintenance as required under this Chapter and/or as required in the approved maintenance agreement as required hereunder, the City shall abate such violations, as a public nuisance, pursuant to the procedures set forth in Chapter 8.16 of the San Dimas Municipal Code.

4. A fully executed "Maintenance Covenant for permanent BMP's Requirements" shall be recorded with the L.A. County Registrar/Recorder and submitted to the Public Works Department prior to the Certificate of Occupancy. Covenant documents shall be required to include an exhibit that details the installed treatment control devices as well as any site design or source control Best Management Practices (BMPs) for post construction. The information to be provided on this exhibit shall include, but not be limited to:

a. 8 ½" x 11" exhibits with record property owner information.

b. Types of BMPs (i.e., site design, source control and/or treatment control) to ensure modifications to the site are not conducted without the property owner being aware of the ramifications to BMP implementation.

c. Clear depiction of location of BMPs, especially those located below ground.

d. A matrix depicting the types of BMPs, frequency of inspection, type of maintenance required, and if proprietary BMPs, the company information to perform the necessary maintenance.

e. Agreement to retain documentation of proper maintenance for a period of two (2) years.

f. Understanding that documentation of proper maintenance must be presented to the City upon request.

14.13.110 Enforcement

Any person violating any provision of this Chapter shall be responsible for a municipal civil infraction and subject to the City's enforcement policy as set forth in the provisions of Chapter 1 and/or Chapter 8.16 of the San Dimas Municipal Code.

14.13.120 Stop Work Order

Where there is work in progress that causes or constitutes in whole or in part, a violation of any provision of this Chapter, the City is authorized to issue a Stop Work Order so as to prevent further or continuing violations or adverse effects. All persons to whom the stop work order is directed, or who are involved in any way with the work or matter described in the stop work order shall fully and promptly comply therewith. The City may also undertake or cause to be undertaken, any necessary or advisable protective measures so as to prevent violations of this Chapter or to avoid or reduce the effects of noncompliance herewith. The cost of any such protective measures shall be the responsibility of the owner of the property upon which the work is being done and the responsibility of any person carrying out or participating in the work.

14.13.130 Failure to Comply; Completion

In addition to any other remedies, should any property owner fail to comply with the provisions of this Chapter, the City may, after the giving of reasonable notice and opportunity for compliance, have the necessary work done, and the owner shall be obligated to promptly reimburse the City for all costs of such work.

When emergency measures are necessary to moderate a nuisance, to protect public safety, health and welfare, and/ or to prevent loss of life, injury or damage to property, the City is authorized to carry out or arrange for all such emergency measures. Property owners shall be responsible for the cost of such measures made necessary as a result of a violation of this Chapter, and shall promptly reimburse the City for all of such costs.

14.13.150 Cost Recovery for Damage to Storm Drain System

A discharger shall be liable for all costs incurred by the City as the result of causing a discharge that produces a deposit or obstruction, or causes damage to, or impairs a storm drain, or violates any of the provisions of this Chapter. Costs include, but are not limited to, those penalties levied by the Environmental Protection Agency or Los Angeles Regional Water Quality Control Board for violation of an NPDES permit, attorney fees, and other costs and expenses.

Appendix D

Applicable Water Quality Objectives

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
1,1,1-Trichloroethane	µg/L		200				
1,1,2,2-Tetrachloroethane	µg/L		1	11	11	0.17	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L		1200				
1,1,2-Trichloroethane	µg/L		5	42	42	0.6	
1,1-Dichloroethane	µg/L		5				
1,1-Dichloroethylene	µg/L		6	3.2	3.2	0.057	
1,2,4-Trichlorobenzene	µg/L		70				
1,2-Dibromo-3-Chloropropane	µg/L		0.2				
1,2-Dichlorobenzene	µg/L		600	17000	17000	2700	
1,2-Dichloroethane	µg/L		0.5	99	99	0.38	
1,2-Dichloropropane	µg/L		5	39	39	0.52	
1,2-Diphenylhydrazine	µg/L			0.54	0.54	0.04	
1,2-Trans-Dichloroethylene	µg/L		10	140000	140000	700	
1,3-Dichlorobenzene	µg/L			2600	2600	400	
1,3-Dichloropropylene	µg/L		0.5	1700	1700	10	
1,4-Dichlorobenzene	µg/L		5	2600	2600	400	
2,3,7,8-TCDD (Dioxin)	pg/L		30	0.014	0.014	0.013	
2,4,5-TP	µg/L		50				
2,4,6-Trichlorophenol	µg/L			6.5	6.5	2.1	
2,4-D	µg/L		70				
2,4-Dichlorophenol	µg/L			790	790	93	
2,4-Dimethylphenol	µg/L			2300	2300	540	
2,4-Dinitrophenol	µg/L			14000	14000	70	
2,4-Dinitrotoluene	µg/L			9.1	9.1	0.11	
2-Chloronaphthalene	µg/L			4300	4300	1700	
2-Chlorophenol	µg/L			400	400	120	
2-Methyl-4,6-Dinitrophenol	µg/L			765	765	13.4	
3,3'-Dichlorobenzidine	µg/L			0.077	0.077	0.04	
4,4'-DDD	µg/L			0.00084	0.00084	0.00083	
4,4'-DDE	µg/L			0.00059	0.00059	0.00059	
4,4'-DDT	µg/L			0.00059	0.00059	0.00059	0.001 G, ii
Acenaphthene	µg/L			2700	2700	1200	
Acrolein	µg/L			780	780	320	3ug/L
Acrylonitrile	µg/L			0.66	0.66	0.059	
Alachlor	µg/L		2				
Aldrin	µg/L			0.00014	0.00014	0.00013	0
alpha-BHC	µg/L			0.013	0.013	0.0039	
alpha-Endosulfan	µg/L			0.056	0.0087	0.056	0.056 G, Y
Aluminum	µg/L		1000				
Ammonia (Total) as N	mg/L	0.035	0.035				
Ammonia as N	mg/L	2.23	2.23				
Anthracene	µg/L			110000	110000	9600	
Antimony	µg/L		6	4300	4300	14	
Aroclors	µg/L	0.00007	0.00007	0.00017	0.00017	0.00017	
Arsenic	µg/L		50	150	36	150	150 A, D
Asbestos	MFL		7	0	0	7	
Atrazine	µg/L		3				
Barium	µg/L		1000				
Bentazon	µg/L		18				
Benzene	µg/L		1	71	71	1.2	
Benzidine	µg/L			0.00054	0.00054	0.00012	
Benzo(a)Anthracene	µg/L			0.049	0.049	0.0044	
Benzo(a)Pyrene	µg/L		0.2	0.049	0.049	0.0044	
Benzo(b)Fluoranthene	µg/L			0.049	0.049	0.0044	
Benzo(k)Fluoranthene	µg/L			0.049	0.049	0.0044	
Beryllium	µg/L		4	0	0	0	
beta-BHC	µg/L			0.046	0.046	0.014	
beta-Endosulfan	µg/L			0.056	0.0087	0.056	0.056 G, Y
Bioaccumulation							
Biostimulatory Substances							
Bis(2-chloroethyl)Ether	µg/L			1.4	1.4	0.031	
Bis(2-chloroisopropyl)Ether	µg/L			170000	170000	1400	
Bis(2-ethylhexyl)Adipate	µg/L		400				
Bis(2-ethylhexyl)Phthalate	µg/L		4	5.9	5.9	1.8	
BOD	mg/L						
Boron	mg/L						0
Bromoform	µg/L			360	360	4.3	
Butylbenzyl Phthalate	µg/L			5200	5200	3000	
Cadmium	µg/L		5	2.2	9.3	2.2	0.25 D, E
Carbofuran	µg/L		18				

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
Carbon Tetrachloride	µg/L		0.5	4.4	4.4	0.25	
Chemical Constituents							
Chlordanes	µg/L		0.1	0.00059	0.00059	0.00057	
Chloride	mg/L						230000
Chlorine (Total Residual)	µg/L		100				
Chlorobenzene	µg/L		70	21000	21000	680	
Chlorodibromomethane	µg/L			34	34	0.41	
Chromium	µg/L		50				
Chromium (III)	µg/L			180		180	74 D, E
Chromium (VI)	µg/L			11	50	11	11 D
Chrysene	µg/L			0.049	0.049	0.0044	
cis-1,2-Dichloroethylene	µg/L		6				
Color							0
Copper	µg/L			9	3.1	9	4.8 D, cc
Cyanide	µg/L		200	5.2	1	5.2	5.2 Q
Dalapon	µg/L		200				
Dibenzo(a,h)Anthracene	µg/L			0.049	0.049	0.0044	
Dichlorobromomethane	µg/L			46	46	0.56	
Dieldrin	µg/L			0.00014	0.00014	0.00014	0.056 O
Diethyl Phthalate	µg/L			120000	120000	23000	
Dimethyl Phthalate	µg/L			2900000	2900000	313000	
Di-n-Butyl Phthalate	µg/L			12000	12000	2700	
Dinoseb	µg/L		7				
Diquat	µg/L		20				
Dissolved Oxygen	mg/L	5	5				
E. Coli (30-day geometric mean)	MPN/100mL	126	126				
E. Coli (single sample maximum)	MPN/100mL	235	235				
Endosulfan Sulfate	µg/L			240	240	110	
Endothall	µg/L		100				
Endrin	µg/L		2	0.036	0.0023	0.036	0.036 O
Endrin Aldehyde	µg/L			0.81	0.81	0.76	
Enterococcus	MPN/100mL	35	35				
Ethylbenzene	µg/L		700	29000	29000	3100	
Ethylene Dibromide	µg/L		0.05				
Exotic Vegetation							
Fecal Coliform	MPN/100mL	200	200				
Floating Material							
Fluoranthene	µg/L			370	370	300	
Fluorene	µg/L			14000	14000	1300	
Fluoride	mg/L		2				
gamma-BHC (Lindane)	µg/L		0.2	0.063	0.063	0.019	0
Glyphosate	µg/L		700				
Gross Alpha particle activity	pCi/L		15				
Gross Beta particle activity	pCi/L		50				
Habitat							
Heptachlor	µg/L		0.01	0.00021	0.00021	0.00021	0.0038 G
Heptachlor Epoxide	µg/L		0.01	0.00011	0.00011	0.0001	0.0038 G, V
Hexachlorobenzene	µg/L		1	0.00077	0.00077	0.00075	
Hexachlorobutadiene	µg/L			50	50	0.44	
Hexachlorocyclopentadiene	µg/L		50	17000	17000	240	
Hexachloroethane	µg/L			8.9	8.9	1.9	
Hydrology							
Indeno(1,2,3-cd)Pyrene	µg/L			0.049	0.049	0.0044	
Isophorone	µg/L			600	600	8.4	
Lead	µg/L			2.5	8.1	2.5	2.5 D, E
MBAS	µg/L		500				
Mercury	µg/L		2	0.051	0.051	0.05	0.77 D, hh
Methoxychlor	µg/L		40				0.03 C
Methyl Bromide	µg/L			4000	4000	48	
Methylene Chloride	µg/L		5	1600	1600	4.7	
Molinate	µg/L		20				
Nickel	µg/L		100	52	8.2	52	52 D, E
Nitrate as N	mg/L		10				
Nitrate as NO3	mg/L		45				
Nitrite as N	mg/L		1				
Nitrobenzene	µg/L			1900	1900	17	
Nitrogen (NO3-N+NO2-N)	mg/L		10				
N-Nitrosodimethylamine	µg/L			8.1	8.1	0.00069	
N-Nitrosodi-n-Propylamine	µg/L			1.4	1.4	0.005	
N-Nitrosodiphenylamine	µg/L			16	16	5	

Constituent	Units	Basin Plan		CTR			EPA 304(a) criteria
		Min non-MUN	Min MUN	Min non-MUN fresh	Min non-MUN salt	Min MUN fresh	
Oil + Grease	mg/L						
Oxamyl	µg/L		200				
PCBs	µg/L			0.00017	0.00017	0.00017	
Pentachlorophenol	µg/L		1	8.2	7.9	0.28	15 F
pH	pH Units	6.5	6.5				6.5 – 9 C
Phenol	µg/L			4600000	4600000	21000	
Picloram	µg/L		500				
Pyrene	µg/L			11000	11000	960	
Radioactive Substances	pCi/L						
Radium-226 + Radium-228	pCi/L		5				
Ratio Fecal/Total Coliform							
Selenium	µg/L		50	5	71	5	5.0 R
Silver	µg/L			3.4	1.9	3.4	0
Simazine	µg/L		4				
Strontium-90	pCi/L		8				
Styrene	µg/L		100				
Sulfate	mg/L						
Taste and Odor							
TDS	mg/L						
Temperature	°C	26.7	26.7				0
Tetrachloroethylene	µg/L		5	8.85	8.85	0.8	
Thallium	µg/L		2	6.3	6.3	1.7	
Thiobencarb	µg/L		70				
Toluene	µg/L		150	200000	200000	6800	
Total Coliform	MPN/100mL	70	70				
Total Settleable Solids							
Toxaphene	µg/L		3	0.0002	0.0002	0.0002	0.0002
Toxicity							
Trichloroethylene	µg/L		5	81	81	2.7	
Trichlorofluoromethane	µg/L		150				
Tritium	pCi/L		20000				
TSS	mg/L						
Turbidity	NTU						
Uranium	pCi/L		20				
Vinyl Chloride	µg/L		0.5	525	525	2	
Xylenes (Total)	µg/L		1750				
Zinc	µg/L			120	81	120	120 D, E

Applicable WQBELs per the San Gabriel River Metals TMDL.

Constituent	Condition	Waterbody	Limitation
Lead	Wet	All water bodies in ESGV WMP area within the San Gabriel River Watershed	81.34 µg/L x storm volume
Selenium	Dry	All discharges to Thompson Creek and San Jose Creek Reach 2	5 µg/L

Applicable Total Phosphorus and Total Nitrogen WQBELs per the USEPA Lakes TMDL

	Default Load-based Limitations		Concentration-based Limitations[1,2]	
Jurisdiction	Total Phosphorus (lb/yr as P)	Total Nitrogen (lb/yr as N)	Total Phosphorus (mg/L as P)	Total Nitrogen (mg/L as N)
Claremont	169	829	0.1	1.0
La Verne	2,772	11,766	0.1	1.0
Pomona	6.30	28.3	0.1	1.0
San Dimas	31.1	137	0.1	1.0

1 If the Regional Board Executive Office approves a request for concentration-based limitations, and USEPA does not object within 60 days.

2 If applicable water quality objectives for ammonia, dissolved oxygen, and pH are achieved; and chlorophyll-a target of 20 µg/L as a summer average (May-September) and an annual average is met, in the lake; the concentration-based limitations shall be considered attained.

Applicable Total Mercury WQBELs per the USEPA Lakes TMDL

	Measured at the point of Discharge[1]
Jurisdiction	Total Mercury (g/yr as Hg)
Claremont	0.674
La Verne	10.6
Pomona	0.026
San Dimas	0.109

1 Both wet and dry weather

Applicable PCBs WQBELs per the USEPA Lakes TMDL

Jurisdiction	Default Limitations: Associated with Suspended Sediment (µg/kg dry weight)	Default Limitations: Water Column (ng/L)	Alternative Limitations[1]: Associated with Suspended Sediment (µg/kg dry weight)	Alternative Limitations[1]: Water Column (ng/L)
Claremont	0.59	0.17	59.8	0.17
La Verne	0.59	0.17	59.8	0.17
Pomona	0.59	0.17	59.8	0.17
San Dimas	0.59	0.17	59.8	0.17

1 If the Regional Board Executive Office approves a request for alternative limitations and USEPA does not object within 60 days of receiving notice. Fish tissue targets of 3.6 ppb wet weight must be met for three or more years for common carp composites of at least five fish 350 mm length.

Applicable PCBs WQBELs per the USEPA Lakes TMDL

Jurisdiction	Default Limitations: Associated with Suspended Sediment (µg/kg dry weight)	Default Limitations: Water Column (ng/L)	Alternative Limitations[1]: Associated with Suspended Sediment[2,3] (µg/kg dry weight)	Alternative Limitations[1]: Water Column[2,4] (ng/L)
Claremont	0.59	0.17	59.8	0.17
La Verne	0.59	0.17	59.8	0.17
Pomona	0.59	0.17	59.8	0.17
San Dimas	0.59	0.17	59.8	0.17

1 If the Regional Board Executive Office approves a request for alternative limitations and USEPA does not object within 60 days of receiving notice. Fish tissue targets of 3.6 ppb wet weight must be met for three or more years for common carp composites of at least five fish each 350 mm in length.

2 Measured at the point of discharge

3 applied as a three-year average

4 applies as an annual average

Applicable Total Chlordane WQBELs per the USEPA Lakes TMDL

Jurisdiction	Default Limitations: Associated with Suspended Sediment (µg/kg dry weight)	Default Limitations: Water Column (ng/L)	Alternative Limitations[1]: Associated with Suspended Sediment[2,3] (µg/kg dry weight)	Alternative Limitations[1]: Water Column[2,4] (ng/L)
Claremont	0.75	0.57	3.24	0.57
La Verne	0.75	0.57	3.24	0.57
Pomona	0.75	0.57	3.24	0.57
San Dimas	0.75	0.57	3.24	0.57

1 If the Regional Board Executive Office approves a request for alternative limitations and USEPA does not object within 60 days of receiving notice. Fish tissue targets of 5.6 ppb wet weight must be met for three or more years for common carp composites of at least five fish each 350 mm in length.
2 Measured at the point of discharge
3 applied as a three-year average
4 applies as an annual average

Applicable Dieldrin WQBELs per the USEPA Lakes TMDL

Jurisdiction	Default Limitations: Associated with Suspended Sediment (µg/kg dry weight)	Default Limitations: Water Column (ng/L)	Alternative Limitations[1]: Associated with Suspended Sediment[2,3] (µg/kg dry weight)	Alternative Limitations[1]: Water Column[2,4] (ng/L)
Claremont	0.22	0.14	1.90	0.14
La Verne	0.22	0.14	1.90	0.14
Pomona	0.22	0.14	1.90	0.14
San Dimas	0.22	0.14	1.90	0.14

1 If the Regional Board Executive Office approves a request for alternative limitations and USEPA does not object within 60 days of receiving notice. Fish tissue targets of 0.46 ppb wet weight must be met for three or more years for common carp composites of at least five fish each 350 mm in length.
2 Measured at the point of discharge
3 applied as a three-year average
4 applies as an annual average

Applicable DDT WQBELs per the USEPA Lakes TMDL

Jurisdiction	Default Limitations: Total DDT Associated with Suspended Sediment (µg/kg dry weight)	Default Limitations: 4-4' DDT Water Column (ng/L)	Alternative Limitations[1]: Total DDT Associated with Suspended Sediment[2,3] (µg/kg dry weight)	Alternative Limitations[1]: 4-4' DDT Water Column[2,4] (ng/L)
Claremont	3.94	0.59	5.28	0.59
La Verne	3.94	0.59	5.28	0.59
Pomona	3.94	0.59	5.28	0.59
San Dimas	3.94	0.59	5.28	0.59

1 If the Regional Board Executive Office approves a request for alternative limitations and USEPA does not object within 60 days of receiving notice. Fish tissue targets of 21 ppb wet weight must be met for three or more years for common carp composites of at least five fish each 350 mm in length.

2 Measured at the point of discharge

3 applied as a three-year average

4 applies as an annual average

Los Angeles Regional Water Quality Control Board

June 25, 2015

Permittees of the East San Gabriel Valley Watershed Management Group[1]
(See Distribution List)

APPROVAL OF THE EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT GROUP COORDINATED INTEGRATED MONITORING PROGRAM, PURSUANT TO ATTACHMENT E, PART IV.B OF THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Permittees of the East San Gabriel Valley Watershed Management Group:

The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board or Board) has reviewed the revised monitoring program submitted on February 18, 2015 by the East San Gabriel Valley Watershed Management Group (Group). This monitoring program was submitted pursuant to the provisions of NPDES Permit No. CAS004001 (Order No. R4-2012-0175), which authorizes discharges from the municipal separate storm sewer system (MS4) operated by 86 municipal Permittees within Los Angeles County (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop and implement a coordinated integrated monitoring program (CIMP) that achieves the five Primary Objectives set forth in Part II.A of Attachment E and includes the elements set forth in Part II.E of Attachment E. These programs must be approved by the Executive Officer of the Los Angeles Water Board.

The Los Angeles Water Board has reviewed the Group's revised CIMP and has determined that the CIMP includes the elements set forth in Part II.E of Attachment E and will achieve the Primary Objectives set forth in Part II.A of Attachment E of the LA County MS4 Permit.

Public Review and Comment

On July 3, 2014, the Board provided public notice and a 46-day period to allow for public review and comment on the Group's draft CIMP. A separate notice of availability regarding the draft CIMPs, including the Group's CIMP, was directed to State Senators and Assembly Members within the Coastal Watersheds of Los Angeles County. The Board received three comment letters that had comments applicable to the Group's draft CIMP. One joint letter was from the Natural Resources Defense Council (NRDC), Heal the Bay, and Los Angeles Waterkeeper, and the other letters were from the Construction Industry Coalition on Water Quality (CICWQ) and

[1] Permittees of the East San Gabriel Valley Watershed Management Group CIMP include the cities of Claremont, La Verne, Pomona, and San Dimas.

Ventura Countywide Stormwater Quality Management Program. During the review of the draft and revised CIMP, the Los Angeles Water Board considered those comments applicable to the Group's proposed CIMP.

Los Angeles Water Board Review

Concurrent with the public review, the Los Angeles Water Board, along with U.S. EPA Region IX staff, reviewed the draft CIMPs. On November 20, 2014, the Los Angeles Water Board sent a letter to the Group detailing the Board's comments on the draft CIMP and identifying the revisions that needed to be addressed prior to the Board's approval of the Group's CIMP. The letter directed the Group to submit a revised CIMP addressing the Los Angeles Water Board's comments. Prior to the Group's submittal of its revised CIMP, the Los Angeles Water Board staff had a meeting on January 13, 2015 and email exchanges with the Group's representatives and consultants to discuss the Board's remaining comments and necessary revisions to the draft CIMP. The Group submitted its revised CIMP on February 18, 2015 for Los Angeles Water Board review and approval. Following submittal of the revised CIMP, Los Angeles Water Board staff met with the Group on June 4, 2015 to further discuss CIMP revisions.

In separate correspondence to all Permittees developing CIMPs and Integrated Monitoring Programs (IMPs), the Los Angeles Water Board will also be providing clarification of requirements for toxicity monitoring – specifically regarding additional toxicity monitoring upstream and at outfalls where toxicity is identified during a sampling event at a receiving water monitoring site.

CIMP Approval

The Los Angeles Water Board hereby approves the Group's February 18, 2015 revised CIMP.

On June 4, 2015, Regional Board staff met with the Permittees to discuss proposed changes to the monitoring at the Upper Chino Creek stormwater outfall monitoring location included in the February 18, 2015 revised CIMP. Based on these discussions, the Group may update Table 4-6 (pg. 42) of the revised CIMP so that it does not have to monitor *E. coli* at the Upper Chino Creek monitoring site since this constituent is currently being monitored through the implementation of the Bacterial Indicator TMDL for the Middle Santa Ana River. However, all other constituents in Table 4-6 must still be monitored as proposed in the revised CIMP. For clarity, the Group may indicate in its Annual Reports that discharges from this outfall flow to the Santa Ana River, as opposed to the San Gabriel River. If the Group chooses to make this revision to its CIMP, the Group shall submit a revised final CIMP to the Los Angeles Water Board by **July 9, 2015**.

Pursuant to Attachment E, Part IV.C.6 of the LA County MS4 Permit, the Group must commence implementing its monitoring program within 90 days after this approval of the final CIMP (i.e. no later than September 23, 2015). Please note that the Group is responsible for complying with all reporting provisions included in Attachment E, Part XIV – XVIII and Section E of Part XIX, "Reporting Requirements for San Gabriel River WMA TMDLs," and Attachment D, Sections IV, V, and VII.A of the LA County MS4 Permit. The Group is also responsible for complying with applicable reporting provisions included in Section C of Part XIX, "Reporting Requirements for Dominguez Channel and Greater Harbors Waters WMA TMDLs. Finally, the

Group is also responsible for complying with the following requirements under Annual Reporting and Adaptive Management.

Annual Reporting

Within the reporting year, through its Annual Report per Attachment E, Part XVIII of the LA County MS4 Permit, the Group shall report on the status of the phased initiation of stormwater outfall monitoring established in the revised CIMP and specified below.

- Section 1.4 "Phased Implementation of Monitoring"
- Section 12 "Schedule for CIMP Implementation": The CIMP establishes a phased approach to initiating monitoring with the installation of three receiving water monitoring sites installed in Fiscal Year 2015-16 and the installation of three stormwater outfall monitoring sites in Fiscal Year 2016-17.

In addition, the Annual Report shall provide an Integrated Monitoring Report that summarizes all identified exceedances of:

  - outfall-based stormwater monitoring data,
  - wet weather receiving water monitoring data,
  - dry weather receiving water monitoring data, and
  - non-storm water outfall monitoring data

against all applicable receiving water limitations, water quality-based effluent limitations, non-storm water action levels, and aquatic toxicity thresholds as defined in Sections XII.F and G of this MRP. All sample results that exceeded one or more applicable thresholds shall be readily identified.

The Annual Report shall also include a Municipal Action Level (MAL) Assessment Report, which shall present the stormwater outfall monitoring data in comparison to the applicable MALs, and identify those subwatersheds with a running average of twenty percent or greater of exceedances of the MALs in discharges of stormwater from the MS4. Please note that beginning in Year 3 after the effective date of the LA County MS4 Permit, each Permittee or group of Permittees shall submit a MAL Action Plan with the Annual Report (first MAL Action Plan due with December 15, 2015 Annual Report) to the Regional Water Board Executive Officer, for those subwatersheds with a running average of twenty percent or greater of exceedances of the MALs in any discharge of storm water from the MS4. Please note that implementation of an approved Watershed Management Program (WMP) or Enhanced Watershed Management Program (EWMP) per Part VI.C of the LA County MS4 Permit fulfills all requirements related to the development and implementation of the MAL Action Plan, as per Attachment G of the LA County MS4 Permit, for those pollutants addressed by the WMP or EWMP.

Adaptive Management

The Regional Water Board or its Executive Officer, consistent with 40 CFR section 122.41, may approve changes to the Monitoring and Reporting Program, after providing the opportunity for public comment, either:

1. By request of the Group or by an interested person after submittal of the Monitoring Report. Such request shall be in writing and filed not later than 60 days after the Monitoring Report submittal date, or
2. As deemed necessary by the Regional Water Board Executive Officer, following notice to the Group.

As part of the adaptive management process, any modifications to the CIMP must be submitted to the Los Angeles Water Board for review and approval. The Group must implement any modifications to the CIMP upon approval by the Los Angeles Water Board or its Executive Officer, or within 60 days of submittal of modifications if the Los Angeles Water Board or its Executive Officer expresses no objections. Note that the Group's Report of Waste Discharge (ROWD) is due no later than July 1, 2017. To align any modifications to the CIMP proposed through the adaptive management process with permit reissuance, results of the first adaptive management cycle should be submitted in conjunction with the Group's ROWD.

If you have any questions, please contact Mr. Chris Lopez of the Storm Water Permitting Unit by electronic mail at Chris.Lopez@waterboards.ca.gov or by phone at (213) 576-6674. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures: East San Gabriel Valley Watershed Management Group Distribution List

EAST SAN GABRIEL VALLEY WMG DISTRIBUTION LIST		
Name	City	Email Address
Latoya Cyrus	San Dimas	lcyrus@ci.san-dimas.ca.us
Loretta Mustafa	Claremont	lmustafa@ci.claremont.ca.us
Kathleen Trepa	Claremont	ktrepa@ci.claremont.ca.us
Brian Desatnik	Claremont	bdesatnik@ci.claremont.ca.us
Cari Sneed	Claremont	csneed@ci.claremont.ca.us
Lisa O'Brien	La Verne	lobrien@ci.la-verne.ca.us
Rafferty Wooldridge	La Verne	rwooldridge@ci.la-verne.ca.us
Julie Carver	Pomona	julie_carver@ci.pomona.ca.us
Meg McWade	Pomona	Meg_McWade@ci.pomona.ca.us

July 29, 2015

Permittees of the East San Gabriel Valley Watershed Management Group[1]

FINAL APPROVED EAST SAN GABRIEL VALLEY GROUP'S WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Permittees of the East San Gabriel Valley Watershed Management Group:

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach MS4* (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or an Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E and Attachments L through R (Total Maximum Daily Load Provisions), by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures), except the Planning and Land Development Program.

On April 28, 2015, on behalf of the Los Angeles Water Board, I approved, with conditions, the East San Gabriel Valley (ESGV) Group's WMP. My approval letter directed the ESGV Group to submit a final WMP that satisfies all the conditions listed in the letter no later than June 12, 2015. On June 12, 2015 the ESGV Group submitted its final WMP, as directed.

After review of the final ESGV Group's WMP submitted on June 12, 2015, I have determined that the ESGV Group's WMP satisfies all of the conditions identified in my April 28, 2015 approval letter. The WMP dated June 2015 constitutes the final approved WMP for the ESGV Group.

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[1] Permittees of the East San Gabriel Valley Watershed Management Group include the cities of Claremont, La Verne, Pomona, and San Dimas. See attached distribution list.

The Los Angeles Water Board appreciates the participation and cooperation of the ESGV Group in the implementation of the LA County MS4 Permit. If you have any questions, please contact Ivar Ridgeway, Storm Water Permitting, at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

CITY OF CLAREMONT
Community Development Department

City Hall
207 Harvard Avenue
P.O. Box 880
Claremont, CA 91711-0880
FAX (909) 399-5327
www.ci.claremont.ca.us

Building • (909) 399-5471
Planning • (909) 399-5470
Engineering • (909) 399-5465
Community Improvement • (909) 399-5467
Administration • (909) 399-5321

July 30, 2015

VIA Regional Website

Regional Water Quality Control Board
Los Angeles Region
Attention: Ivar K. Ridgeway, Senior Environmental Scientist
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Mr. Ridgeway,

The East San Gabriel Valley Watershed Management Group (ESGVWMG) comprises the Cities of Claremont, La Verne, Pomona, and San Dimas. Pursuant to the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit (NPDES Permit No. CAS004001; Order No. R4-2012-0175), ESGVWMG hereby submits the revised final Coordinated Integrated Monitoring Program (CIMP).

The CIMP has been updated to reflect a correction to Table 4-6 (pg.42) of the revised CIMP. Table 4-6 has been revised to reflect the removal of E. coli monitoring at the Upper Chino Creek HUC-12 monitoring site. As noted in the Regional Board CIMP approval letter dated June 25, 2015, the Upper Chino Creek HUC-12 site is located within the Middle Santa Ana River watershed. As such, E. coli monitoring is being conducted through the implementation of the Bacterial Indicator TMDL for the Middle Santa Ana River. The Upper Chino Creek site will be monitored for the following constituents:

- Dissolved Oxygen
- pH
- Temperature
- Specific Conductivity
- Hardness
- Total Suspended Solids
- Copper
- Lead
- Zinc

The ESGVWMG looks forward to working with Regional Board staff during the CIMP and WMP implementation and adaptive management process. If there are any questions, please contact the respective City Staff as listed below:

- Loretta Mustafa – City of Claremont, (909) 399-5474
- Lisa O'Brien – City of La Verne, (909) 596-8741
- Julie Carver – City of Pomona, (909) 620-3628
- Latoya Cyrus – City of San Dimas, (909) 394-6240

Sincerely,

Loretta Mustafa
City Engineer

Cc: Lisa O'Brien, City of La Verne
Julie Carver, City of Pomona
Latoya Cyrus, City of San Dimas

Attachment: Revised Final ESGVWMG Coordinated Integrated Monitoring Program (CIMP)

July 2015

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

Coordinated Integrated Monitoring Program (CIMP)

Prepared by

East San Gabriel Valley Watershed Management Group

(Cities of Claremont, La Verne, Pomona, and San Dimas)

MWH

Executive Summary

The East San Gabriel Valley Watershed Management Group (ESGV Group) is comprised of the Cities of Claremont, La Verne, Pomona, and San Dimas (Group Members). Group Members started meeting in early 2013 to collaboratively develop a Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) for the East San Gabriel Valley Watershed.

The WMP and CIMP fulfill requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit Order No. R4-2012-0175 (Permit). The Permit was adopted by the Los Angeles Regional Water Quality Control Board (Regional Board) November 8, 2012, and became effective December 28, 2012. The CIMP is the Group Members approach to meeting the Monitoring and Reporting Program (MRP) requirements of the Permit.

The CIMP is designed to provide the information necessary to guide management decisions in addition to providing a means to measure compliance with the Permit. The CIMP is composed of five elements:

1. Receiving Water Monitoring
2. Stormwater Outfall Monitoring
3. Non-Stormwater Outfall Assessment and Monitoring
4. New Development/Redevelopment Effectiveness Tracking
5. Regional Studies

Semi-annual analytical data reports and annual monitoring reports will be submitted as outlined in the MRP. The annual monitoring reports will cover the monitoring period of July 1 through June 30.

The WMP, containing customized strategies, control measures, and best management practices (BMPs) for the ESGV Group will be presented in a separate document according to the Permit schedule.

RECEIVING WATER MONITORING

Receiving water monitoring is designed to assess whether water quality objectives are being met in water bodies and if beneficial uses are being supported. The Group Members propose two types of receiving water monitoring:

- **Long-Term Assessment** – Long-Term Assessment (LTA) monitoring is intended to determine if receiving water limitations (RWLs) are achieved, assess trends in pollutant

concentrations over time, and to determine whether designated uses are supported. LTA sites include:

- Live Oak Wash at the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash.

- **TMDL** – TMDL monitoring is conducted to evaluate attainment of or progress in attaining the WLAs. TMDL sites include:

  - San Jose Creek Reach 1 at the downstream intersection with the WMP Boundary.
  - San Dimas Wash at the intersection with the WMP Boundary.
  - Walnut Creek Wash at the intersection with the WMP Boundary (optional site, triggered by ESGV Group if determining WMP area contribution is necessary.)

In addition, the Group Members will be coordinating receiving water monitoring with other watershed management program groups in the San Gabriel River Watershed and the Los Angeles County Sanitation Districts to share monitoring data in the San Gabriel River Watershed Management Area. The Group Members may use the data in evaluating its progress in meeting the goals and requirements of the Permit.

STORMWATER OUTFALL MONITORING

Stormwater outfall monitoring is intended for determining if a Group Member's MS4 system is causing or contributing to water quality issues observed in the receiving water. The Group Members proposes three stormwater outfall monitoring sites, one for each subwatersheds defined by the hydrologic unit code-12 (HUC-12s) for the ESGV Group. The monitoring sites were selected to be representative of the land uses for each HUC-12. Monitoring will be conducted during three events at each stormwater outfall monitoring site for the monitoring requirements of the waterbody to which they discharge, as well as downstream water bodies. Monitoring at these outfall sites will be used to assess compliance with water quality based effluent limitations (WQBELs), TMDL WLAs, and whether the MS4 may be causing or contributing to observed exceedances of RWLs. Monitoring of Puddingstone Reservoir will be conducted by the County of Los Angeles (County) under a separate program.

NON-STORMWATER OUTFALL SCREENING AND MONITORING

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges from major outfalls to receiving waters. The program serves to provide an assessment on whether non-stormwater discharges are potentially impacting the receiving water and whether significant non-stormwater discharges are allowable. The screening process will begin summer 2014. Visual observations gathered from the screening events, such as size, estimated flow, flow characteristics, and receiving water conditions, will be used to determine and prioritize

significant non-stormwater discharges. In the order of prioritization, sources will be investigated, and monitoring sites will be determined. Monitored parameters will depend upon the receiving water on which the non-stormwater outfall site it is located.

NEW DEVELOPMENT/RE-DEVELOPMENT EFFECTIVENESS TRACKING

Group Members maintain databases tracking information related to new and redevelopment projects subject to the minimum control measures (MCMs). The collected information will be used to assess the effectiveness of the low impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction. The CIMP provides general details on the requirements and approaches related to the new and redevelopment tracking requirements. Group Members will each modify the general requirements as appropriate to reflect their own jurisdictional specific practices.

REGIONAL STUDIES

Only one regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The MRP states that each Group Members shall be responsible for supporting the monitoring described at the sites falling within their jurisdictional boundaries. The Los Angeles County Flood Control District (LACFCD) will continue its participation in the SMC regional bioassessment monitoring program providing the Permit required funding on behalf of the Group Members.

ADAPTIVE MANAGEMENT

Historically, monitoring was not performed in the WMP area receiving waters prior to the implementation of the CIMP. Therefore, the monitoring specified in the CIMP will be dynamic. Defined triggers are included in the CIMP for adding constituents to the monitoring program or removing them if they no longer pose water quality issues. The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. Monitoring data from the CIMP will tie into the WMP by providing feedback on water quality changes resulting from control measures implemented by the Group Members.

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LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
BPA	Basin Plan Amendment
CCW	Calleguas Creek Watershed
CEDEN	California Environmental Data Exchange Network
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CIMP	Coordinated Integrated Monitoring Program
COC	Chain of Custody
COV	Coefficient of Variance
CRAM	California Rapid Assessment Method
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
DAP	Discharge Assessment Plan
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
EIA	Effective Impervious Area
ESGV Group	East San Gabriel Valley Watershed Management Group
GIS	Geographic Information System
GWQC	General Water Quality Constituents
HRMS	High Resolution Mass Spectrometry
HUC	Hydrologic Unit Code
IC/ID	Illicit Connection/Illicit Discharge
IMP	Integrated Monitoring Program
IWC	In-Stream Waste Concentration
LA	Los Angeles
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation Districts
LCS	Laboratory Control Sample/Standard
LSGR	Lower San Gabriel River
LTA	Long-Term Assessment
MAL	Municipal Action Level
MDL	Minimum Detection Limit
mg/L	Milligram per Liter
µg/L	Microgram per Liter

MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NAL	Non-stormwater Action Levels
NELAP	National Environmental Laboratory Accreditation Program
NPDES	National Pollutant Discharge Elimination System
NSW	Non-Stormwater
NTU	Nephelometric Turbidity Unit
OC	Organochlorine
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAA	Reasonable Assurance Analysis
Regional Board	Los Angeles Regional Water Quality Control Board
RPD	Relative Percent Difference
RW	Receiving Water
RWL	Receiving Water Limitation
SCCWRP	Southern California Coastal Water Research Project
SGRRMP	San Gabriel River Regional Monitoring Program
SMC	Stormwater Monitoring Coalition
SQO	Sediment Quality Objectives
SSA	Special Study Assessment
SSC	Suspended Sediment Concentration
SW	Stormwater
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TST	Test of Significant Toxicity
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WBPC	Water Body-Pollutant Combination
WLA	Waste Load Allocation
WMA	Watershed Management Area

WMP	Watershed Management Program
WQBEL	Water Quality Based Effluent Limitation
WQS	Water Quality Standard

1 Introduction

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. R4-2012-0175 (Permit) was adopted November 8, 2012, by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the Permit is to ensure the MS4s in the County of Los Angeles (County) are not causing or contributing to exceedances of water quality objectives set to protect the beneficial uses in the receiving waters. Included as Attachment E to the Permit are requirements for a Monitoring and Reporting Program (MRP). The stated primary objectives for the MRP, listed in Part II.A.1 of the MRP, as follows:

1. Assess the chemical, physical, and biological impacts of discharges from the MS4 on receiving waters.
2. Assess compliance with receiving water limitations (RWL) and water quality-based effluent limitations (WQBELs) established to implement Total Maximum Daily Load (TMDL) wet weather and dry weather wasteload allocations (WLAs).
3. Characterize pollutant loads in MS4 discharges.
4. Identify sources of pollutants in MS4 discharges.
5. Measure and improve the effectiveness of pollutant controls implemented under the Permit.

Group Members have the option to develop a Coordinated Integrated Monitoring Program (CIMP) to specify alternative approaches for meeting the primary objectives of the MRP. Additionally, the CIMP is the vehicle to modify TMDL monitoring requirements and other historical monitoring program requirements, to unify efforts on a watershed scale, and provide consistent and comparable water quality observations throughout the watershed. Modifications to the MRP or TMDL monitoring requirements must satisfy the primary objectives and require sufficient justification to allow the changes. The Regional Board Executive Officer (EO) will provide final approval of the CIMP. The attachments and appendices to this CIMP describe additional background information and detail specific analytical and monitoring procedures that will be used to implement this CIMP. The CIMP meets the requirements of the MS4 Permit, including TMDL monitoring requirements.

1.1 EAST SAN GABRIEL VALLEY WATERSHED MANAGEMENT PLAN AREA

The San Gabriel River receives drainage from a 682-square mile area of eastern Los Angeles County and has a main channel length of approximately 58 miles. Its headwaters originate in the San Gabriel Mountains with the East, West, and North Forks. The river flows through residential, commercial and industrial areas before reaching the Pacific Ocean in Long Beach. The main tributaries of the river are Walnut Creek Wash, San Jose Creek, and Coyote Creek.

The WMP area is located in the upper east portion of the San Gabriel River Valley. Water bodies within the WMP area include:

- San Dimas Wash;
- Puddingstone Channel;
- Marshall Creek;
- Live Oak Wash;
- Thompson Wash;
- San Jose Creek;
- Chino Creek;
- San Antonio Creek;
- Walnut Creek Wash; and
- Puddingstone Reservoir.

Receiving waters downstream of the WMP area include:

- Santa Ana River;
- Big Dalton Wash;
- San Gabriel River Reach 1, 2, and 3; and
- San Gabriel Estuary.

The geology of the San Gabriel River Valley provides rapid infiltration of water. During dry weather, the upper watershed is likely to be hydraulically disconnected from the lower watershed. A goal of the monitoring in the CIMP will be to establish when the WMP area is hydraulically connected to the downstream water bodies. If there is no flow to the downstream areas, the discharges in the WMP area cannot possibly be causing or contributing to the downstream water quality impairments. Water quality data for the receiving waters in the WMP area are sparse. Future monitoring results will allow the evaluation of whether MS4 discharges are causing or contributing to water quality objective exceedances in receiving waters in the WMP area.

The ESGV Group WMP area is displayed on **Figure 1-1** along with the named water bodies. Size and land uses for the Group Members are listed in **Table 1-1**. Because a portion of the Angeles National Forest and other open spaces overlap the Group Member jurisdictions, not all areas in each jurisdiction are serviced by the MS4 system. For purposes of the CIMP, the areas of or similar to the national forest are excluded from consideration. The areas serviced by the MS4 system for the Group Members and the land use break downs are presented as **Table 1-2**.

The Cities of Claremont and Pomona are addressing the monitoring requirements established in the Middle Santa Ana River Watershed Bacteria Indicator TMDL (Bacteria TMDL) under a separate program, as they are the only members of the group subject to those requirements. Links to the Santa Ana River Bacteria TMDL Comprehensive Bacteria Reduction Plans for the cities of Claremont and Pomona are included as **Attachment A**.

Figure 1-1.
Water Bodies and Geographic Boundary of the ESGV Group

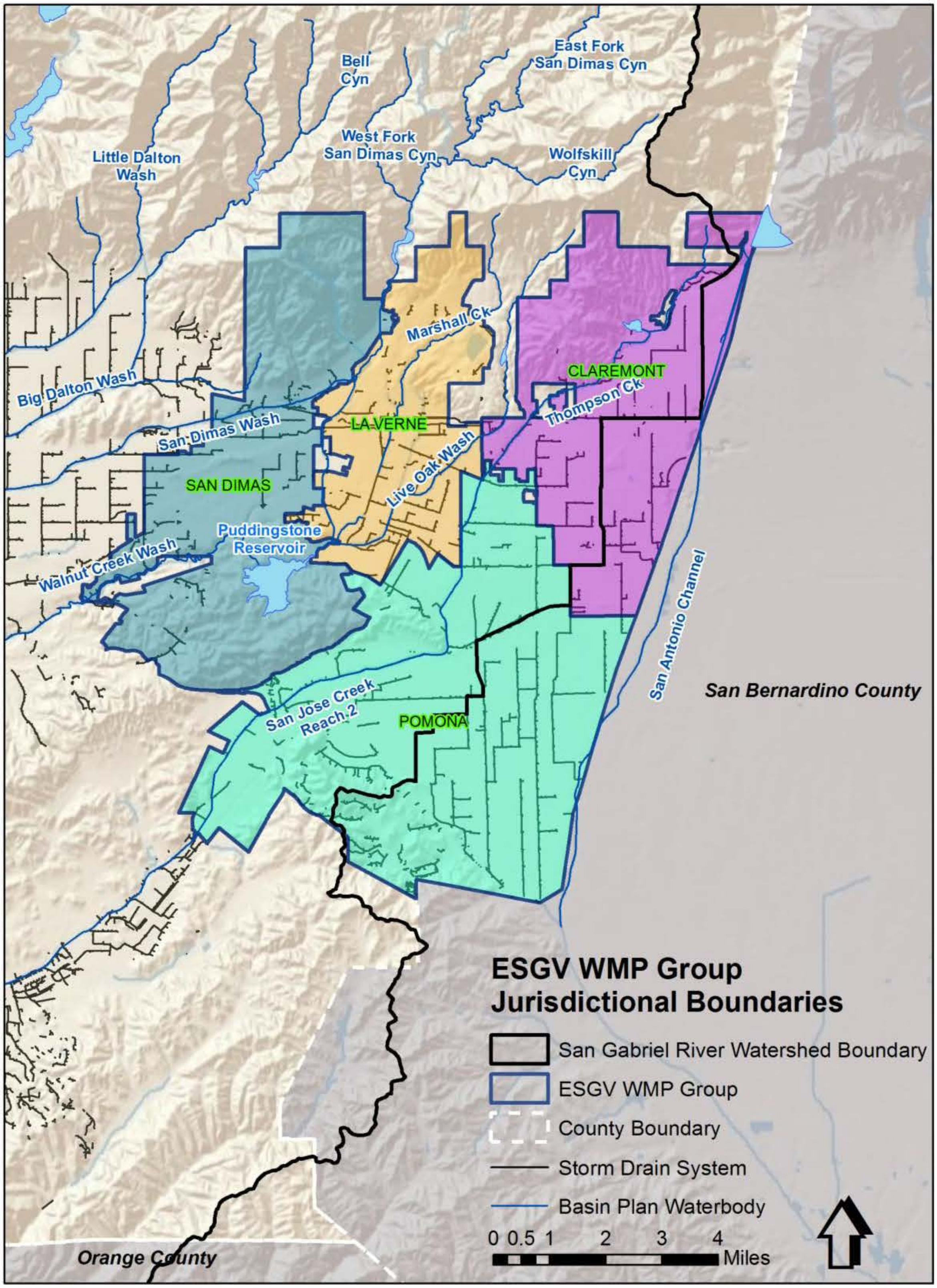

Table 1-1.
List of Group Members with Land Use Summaries within Jurisdictional Boundaries

Group Members	Area (square miles)	Percent of Land Area[1]			
		Res	Com/Ind	Ag/Nur	Open
Claremont	13.0	40	15	<1	45
La Verne	6.3	65	25	2	8
Pomona	21.9	51	34	2	13
San Dimas	14.3	32	9	1	58
All Cities	55.5	45	22	1	32

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the total area considered in the WMP and not just the area covered by the MS4 system.

Table 1-2.
List of Group Members with Land Use Summaries Draining to the MS4 System

Group Members	Area (square miles)	Percent of Land Area[1]			
		Res	Com/Ind	Ag/Nur	Open
Claremont	8	69	25	1	6
La Verne	6	72	20	3	6
Pomona	18	61	32	3	4
San Dimas	7	69	21	3	8
All Cities	38	65	27	2	6

1 Land use classifications include: residential (Res), commercial and industrial (Com/Ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to area covered by the MS4 system.

1.2 WATER QUALITY PRIORITIES

As part of the WMP development, the available data were analyzed to determine water quality priorities for the watershed. Water quality priorities are based on TMDLs, State Water Resources Control Board (SWRCB) 2010 303(d) List of Impaired Water Bodies (303(d) List), and monitoring data. Based on available information and data analysis, water body-pollutant combinations (WBPCs) were classified in one of the three Permit-defined categories, as described in **Table 1-3**.

The Permit categories are utilized in this CIMP to identify parameters that will be monitored at each receiving water and outfall monitoring site. Since the analysis is waterbody specific, different parameters may be monitored at different monitoring sites.

Table 1-3.
Water Body Pollutant Combination Categories

Category	Water Body-Pollutant Combinations (WBPCs) Included
1	WBPCs for which TMDL effluent or receiving water limitations are established in Part VI.E and Attachments P of the MS4 Permit.
2	WBPCs for which data indicate water quality impairment in the receiving water according to the State's Listing Policy, regardless of whether the pollutant is currently on the 303(d) List and for which the MS4 discharges may be causing or contributing.
3	WBPCs for which there are insufficient data to indicate impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

1.2.1 Category 1 Constituents

Three TMDLs are applicable to the ESGV Group and include the Dominguez channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbor Toxics TMDL), the San Gabriel River Metals TMDL (Metals TMDL), and the Los Angeles Area Lakes TMDLs for Puddingstone Reservoir (Puddingstone Reservoir TMDLs). The applicable TMDLs are also listed in **Table 1-4.**

Because the San Gabriel River Metals and the Puddingstone Reservoir TMDLs have both wet and dry weather WLAs allocations applied as grouped allocations, the combined loading from all upstream tributaries must meet the allocations at the listed reaches. Monitoring will be necessary to identify the contribution to the loads from the WMP area. The Regional Board adopted a Basin Plan Amendment (BPA) for the San Gabriel River Metals and Selenium TMDL incorporating an implementation plan and schedule on June 6, 2013 and became effective October 13, 2014. The adopted BPA contains general requirements for ambient monitoring and TMDL effectiveness monitoring. However, very specific requirements were incorporated into the MRP.

While the Harbors Toxics TMDL was developed to address impairments in (among other water bodies) San Pedro Bay, the Permit links the Harbors Toxics TMDL to the San Gabriel River watershed, requiring monitoring for all responsible parties subject to the Metals TMDL. Monitoring is necessary to identify the contribution to the loads from the San Gabriel River Watershed Management Area (WMA). The ESGV Group is coordinating with downstream groups to provide support for performing the required sampling.

Similar to the Metals TMDL, the Puddingstone Reservoir TMDLs were promulgated by United States Environmental Protection Agency (USEPA), and implementation provisions, including monitoring, were not explicitly required in the TMDLs. Rather, the TMDLs proposed monitoring recommendations. However, very specific requirements were incorporated into the MRP. The County and LACFCD are monitoring the reservoir water column, benthic sediment, and fish tissue. The ESGV Group will monitor the MS4 discharge to the reservoir. Therefore, monitoring to address the Puddingstone Reservoir TMDL will be performed through the coordination of both groups.

Table 1-4.
TMDLs Applicable to the WMP Area

TMDL	Effective Date or EPA Approval Date	Regional Board Resolution Number
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbors Toxics TMDL)	03/23/2012	2011-008
Los Angeles Area Lakes Toxics and Nutrients TMDL for Puddingstone Reservoir (Lakes TMDL)	3/26/2012	None (USEPA TMDL)
San Gabriel River Metals and Selenium TMDL (Metals TMDL)	03/26/2007	R13-004 (1) (USEPA TMDL)

1 Regional Board adopted the San Gabriel River Metals TMDL Implementation Plan as BPA through resolution R13-004 on June 6, 2013 and became effective October 13, 2014.

1.2.2 Category 2 Constituents

WBPCs on the State Water Resources Control Board's (SWRCB) 2010 Clean Water Act Section 303(d) List that are not already addressed by a TMDL or other action are included as Category 2. All listings within or downstream of the WMP area were identified and included to acknowledge that discharges from upstream reaches could impact the listed area, particularly during wet weather. However, a constituent included in the table does not infer MS4 discharges from the WMP area contribute to the downstream impairment. The 303(d) listed water bodies are presented in **Table 1-5**.

Table 1-5.
Category 2 Water Body-Pollutants for Tributaries in the WMP Area

Constituent	San Gabriel River Reach			San Jose Creek Reach		Walnut Creek Wash	San Gabriel Estuary
	1	2	3	1	2		
Ammonia				O			
Coliform or other Indicator Bacteria	L	L	L	L	L	L	
Cyanide		L					
TDS				L			
Benthic-Macroinvertebrates						L	
Dioxin							L
Low Dissolved Oxygen							L
Nickel							L
pH	L			L		L	
Toxicity				L			

L - Listed on 2010 303(d) list.
O - Listed on the 2010 303(d) list as being addressed through a single regulatory action (NPDES permit for wastewater discharges)

1.2.3 Category 3 Constituents

Monitoring data for sites within the San Gabriel River WMA was received from the following sources:

- Los Angeles County Department of Public Works (LACDPW) provided long-term monitoring data from the San Gabriel River Mass Emission Station (S14.)
- LACDPW provided temporary monitoring data from the Walnut Creek Wash Tributary Site (TS13.)
- LACDPW provided temporary monitoring data from the San Jose Creek Tributary Site (TS15.)
- The Council for Watershed Health provided monitoring data from their monitoring activities throughout the San Gabriel River watershed.
- The California Environmental Data Exchange Network (CEDEN.)
- Los Angeles County Sanitation Districts (LACSD) provided long-term receiving water monitoring data.

Available data were compared to the applicable water quality objectives to determine the additional Category 2 and Category 3 constituents, depending on the frequency of exceedances.

Data received from the Council for Watershed Health (CWH) and CEDEN largely consisted of short term monitoring activities and many sites from these programs were only used for a single sampling event or had a limited number of constituents tested at the sites. All data were screened to identify potential water quality objective exceedances. The vast majority of the available sites are for receiving waters downstream from the ESGV Group area. Monitoring data specific to the WMP area is lacking. To estimate the potential constituents of concern in the area, data reflective of receiving waters downstream from the WMP area are considered. Implementation of the CIMP and the adaptive management process will allow the assessment of prioritized constituents, removing those from the prioritization where WMP area monitoring reveals they are not water quality issues. Additionally, new constituents found to be water quality issues will be added to the prioritization. The CIMP revision process is detailed in **Section 10**.

1.3 WATER BODY POLLUTANT COMBINATIONS

Where available, the most recent 10 years of data were analyzed to identify WBPCs. Additionally, the last 5 years of data were analyzed to determine if historical issues were abated and to refine the categorization of WBPCs. Subcategories were identified and created to refine the prioritization process. Those pollutants with measurements exceeding water quality objectives are further evaluated and categorized based on the frequency, timing, and magnitude of exceedances. The WBPCs are placed in the respective subcategories in **Table 1-6**. The ESGV Group is monitoring the outfall to Puddingstone Reservoir, while the County and the LACFCD are performing the in-lake monitoring.

Constituents may change subcategories with new information as the monitoring progresses, source investigations occur, and BMP implementation begins. Where exceedances decrease over time, constituents will be reprioritized or removed from the priority list as watershed actions bring prioritized constituents into compliance. For a constituent that is currently not a priority, if the frequency of water quality exceedances increases, then the constituent would be reevaluated using the prioritization procedure, likely increasing the priority. Due to the natural rate of infiltration, the San Gabriel River and some of the tributaries are dry with the exception of storm flows. Future monitoring will be assessed to establish the disconnect between the upper and lower watershed during dry weather and minor storm events. On establishing the disconnection, the corresponding WBPCs flagged due to downstream water quality issues will be adjusted or removed from the categorization.

1.4 PHASED IMPLEMENTATION OF MONITORING

As there are currently no established monitoring sites within the WMP area, it may not be possible to begin monitoring all aspects of the CIMP within 90 days of Regional Board approval. Receiving water and stormwater outfall sites require site planning, equipment purchase, and installation prior to commencing monitoring. Receiving water and outfall monitoring will begin

July 1, 2015, or 90 days after CIMP approval, whichever is later. The Group Members will begin the non-stormwater outfall screening process summer 2014.

Table 1-6.
Summary of San Gabriel River Watershed Water Body-Pollutant Combinations

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1A: WBPCs with past due or current term TMDL deadlines with exceedances in the past 5 years.										
Metals	Copper (Dry)							I	I	
	Selenium (Dry)				I	I				
Bacteria	Fecal Coliform and E. coli (Dry)									F
Category 1B: WBPCs with TMDL deadlines beyond the current Permit term and with exceedances in the past 5 years.										
Metals	Copper (Dry)							F	F	
	Selenium (Dry)				F	F				
Bacteria	Fecal Coliform and E. coli (Wet)									F
Category 1C: WBPCs addressed in USEPA TMDL without an Implementation Plan.										
Nutrients	Total Nitrogen						X			
	Total Phosphorus						X			
Metals	Total Mercury						X			
Legacy	PCB (Sediment)						X			
	PCB (Water)						X			
	Chlordane (Sediment)						X			
	Chlordane (Water)						X			
	Dieldrin (Sediment)						X			
	Dieldrin (Water)						X			
	DDT (Sediment)						X			
	DDT (Water)						X			

Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Category 1D: WBPCs with past due or current term deadlines without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	I	I	I	I	I				
Category 1E: WBPCs with TMDL deadlines beyond the current Permit term without exceedances in the past 5 years.										
Metals	Lead (Wet)[2]	F	F	F	F	F				
Category 2A: 303(d) Listed WBPCs with exceedances in the past 5 years.										
Bacteria	Indicator Organisms	303(d)	303(d)	303(d)	303(d)	303(d)		303(d)		
Metals	Lead (Dry)					X				
	Zinc			X						
	Copper	X		X						
Legacy	Polycyclic Aromatic Hydrocarbon (PAH)		X	X	X	X				
Other	Cyanide		303(d)	X						
Category 2B: 303(d) Listed WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Benthic-Macroinvertebrates	303(d)								
Other	Dissolved Oxygen								303(d)	
Other	pH	303(d)			303(d)			303(d)		
Other	Toxicity				303(d)					
Category 2C: 303(d) Listed WBPCs without exceedances in past 5 years.										
Nutrients	Ammonia				303(d)					
Other	2,3,7,8-TCDD (Dioxin)								303(d)	
Metal	Nickel								303(d)	
	Copper				X					
	Lead (Dry)	X								
	Zinc	X			X					

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Continued

Table 1-6 Continued

Class[1]	Constituent	Walnut Creek Wash	San Gabriel River Reach		San Jose Creek Reach		Pudding-stone Reservoir	San Gabriel River Reach 1	San Gabriel Estuary	Santa Ana River
			2	3	1	2				
Salts	Total Dissolved Solids (Dry)				303(d)					
Category 3A: WBPCs with exceedances in the past 5 years.										
Other	MBAS			X						
Salts	Sulfate (Dry)			X	X	X				
	Chloride (Dry)			X	X	X				
	Total Dissolved Solids (Dry)			X						
Category 3B: WBPCs that are not a "pollutant"[3] (i.e., toxicity).										
Other	Dissolved Oxygen			X	X	X		X(Dry)		
Category 3C: WBPCs without exceedances in past 5 years.										
Other	Cyanide				X					
Metals	Selenium	X						X	X	
	Lead								X	
	Zinc								X	
	Mercury	X								
Other	Lindane			X						

1 Pollutants are considered in a similar class if they have similar fate and transport mechanisms, can be addressed via the same types of control measures, and within the same timeline already contemplated as part of the WMP for the TMDL. (Permit pg. 49).

2 Grouped wet weather waste load allocation, expressed as total recoverable metals discharged to all upstream reaches and tributaries of the San Gabriel River Reach 2.

3 While pollutants may be contributing to the impairment, it currently is not possible to identify the *specific* pollutant/stressor.

Note that unless explicitly stated as sediment, constituents are associated with the water column.

I/F Denotes where the Permit includes interim (I) and/or final (F) effluent and/or receiving water limitations.

303(d) WBPC on the 2010 303(d) List where the listing was confirmed during data analysis.

2 Receiving Water Monitoring Program

Receiving water monitoring is designed to provide data to determine whether the RWLs and water quality objectives are being achieved and if beneficial uses are being supported. Over time, the monitoring will allow the assessment of trends in pollutant concentrations. The following subsections describe how the MRP requirements for receiving water monitoring will be met within the WMP area.

2.1 RECEIVING WATER MONITORING OBJECTIVES

The objectives of the receiving water monitoring include the following:

- Determine whether the RWL are being achieved;
- Assess trends in pollutant concentrations over time, or during specified conditions; and
- Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.

The following presents the receiving water monitoring sites, monitoring parameters and frequency, and a discussion on monitoring coordination. A summary of how the receiving water monitoring program meets the objectives of the MRP is discussed further below. The approach builds off the MRP requirements, the TMDL monitoring requirements, as well as existing monitoring programs in the watershed. Implementation of the CIMP will replace existing TMDL monitoring programs and meet the monitoring requirements for TMDLs that had not yet developed monitoring programs (e.g., Harbors Toxics TMDL, San Gabriel River Metals TMDL, etc.). Note that the Harbors Toxics TMDL required the development of a monitoring program and quality assurance project plan (QAPP). This CIMP addresses those requirements. While not all aspects of a QAPP are explicitly addressed herein the primary requirements that are not included relate to the implementation of the CIMP (e.g., definition of project manager, lines of communication, and standard operating procedures). These requirements can be addressed once an agency is selected to lead the implementation of the CIMP.

2.2 DESCRIPTION OF RECEIVING WATER MONITORING

Receiving water monitoring is designed to achieve the objectives listed in the permit based on the category of WBPCs applicable to the site. WBPCs prioritizations were utilized to support the development of the monitoring approach. WBPCs were prioritized, as described in **Section 1**. To address the different monitoring objectives and priorities, two types of monitoring are proposed:

- **Long Term Assessment** (LTA) – monitoring is intended to determine if RWLs are achieved, to assess trends in pollutant concentrations over time, and to determine whether designated uses are supported.
- **TMDL** Receiving Water (TMDL) – monitoring is conducted to evaluate attainment of or progress in attaining the TMDL.

While not explicitly established in the MRP, the monitoring types proposed distinguish between the different end goals of monitoring for specific constituents within specific water bodies in the WMP area. LTA monitoring provides a long term record to understand conditions within the WMP area, for a robust suite of parameters. TMDL monitoring addresses TMDL related constituents. WBPCs on the 303(d) list, or those meeting the listing requirements and have exceeded receiving water objectives, will be monitored at the LTA and appropriate TMDL sites.

The receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP, receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not, on its own, indicate MS4 discharges caused or contributed to the RWL exceedance, as the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges. The exceedance of a RWL may have been caused or contributed to by a non-MS4 source. A determination regarding whether MS4 discharges caused or contributed to a RWL exceedance should be made using data collected through outfall monitoring.

2.3 RECEIVING WATER MONITORING SITES

The MRP requirements include receiving water monitoring sites at previously designated mass emission stations, TMDL receiving water compliance points, and additional receiving water locations representative of the impacts from MS4 discharges. As there are no existing mass emission stations in the WMP area, the ESGV Group will establish a new LTA site representative of the WMP area. The number of required receiving water monitoring sites is not specified in the MRP, however, the tributaries leaving the WMP area are sited for monitoring. Approximate locations of the proposed monitoring sites for the ESGV Group are shown in **Figure 2-1.** A field assessment was conducted and locations were identified based on the field assessments on December 26, 2013, and January 17, 2014. Summaries of the site selection assessments and proposed location photographs are presented in **Attachment B**.

2.3.1 Long Term Assessment Site

The LTA site is located to fulfill one of the primary objectives of receiving water monitoring; to assess trends in pollutant concentrations over time or during specified conditions. As a result, the primary characteristic of an ideal monitoring site is a robust dataset of previously collected monitoring results so that trends in pollutant concentrations over time, or during specified

conditions, can be assessed. A new LTA site was identified to support understanding of potential impacts associated with MS4 discharges from the ESGV Group. The site receives drainage predominantly from La Verne. However, the land use for all four cities for the ESGV Group are similar and therefore will be reflective of the water quality in receiving waters leaving the WMP area.

The proposed LTA site meets the receiving water objectives and supports an understanding of potential impacts associated with MS4 discharges. However, receiving water sites are intended to assess receiving water conditions. An exceedance of a receiving water limitation at a receiving water site does not, on its own, represent an exceedance of a receiving water limitation that was caused by or contributed to by MS4 discharges as these sites also receive runoff from non-MS4 sources, including open space and other permitted discharges.

The LTA monitoring site will be located on Live Oak Wash between the confluence of Puddingstone Channel, Marshall Creek, and Live Oak Wash; and the discharge into Puddingstone Reservoir. The proposed site is located on **Figure 2-1**. The LTA monitoring site will also be utilized to support TMDL monitoring. Since Live Oak Wash is a soft-bottomed channel and irregularly shaped, flow may be measured within each of Puddingstone Channel, Marshall Creek, and Live Oak Wash and totaled. However, flow will be measured at the located LTA site if a suitable stage-flow rating curve can be developed to determine storm flows without having to enter the channel. Photographs of the LTA site can be found in **Figures 2-2** through **2-4**. Additional photographs and flow monitoring locations evaluated for the LTA site are included in **Attachment A**. Exact placement of the site will be dependent on site engineering constraints.

Figure 2-1.
Overview of Receiving Water Monitoring Sites

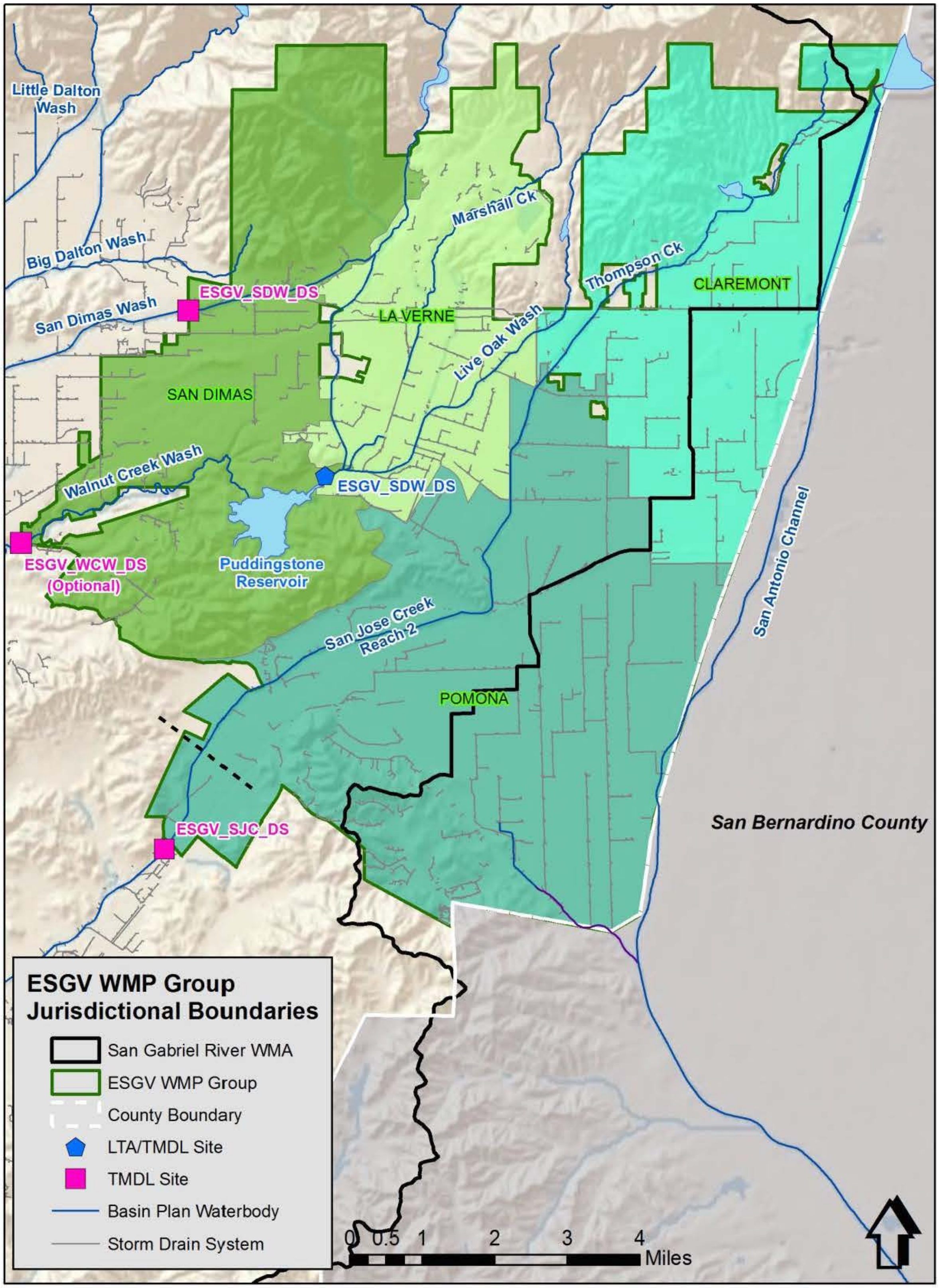

Figure 2-2.
ESGV_LOW_DS Site Looking Upstream in the Soft Bottom Portion of the Channel

Figure 2-3.
ESGV_LOW_DS Site Looking Downstream

Figure 2-4.
Confluence of Channels Discharging to Puddingstone Reservoir at Transition Between Hard and Soft Bottom Channel.

TMDL Sites

Within the WMP area, Metals TMDL monitoring sites are required in San Jose Creek Reaches 1 and 2 and Walnut Creek Wash. Given that San Jose Creek Reach 1 extends for greater than 13 miles and only approximately 1 mile is located within the WMP area, a combined TMDL site will be utilized for San Jose Creek Reaches 1 and 2. The San Jose Creek TMDL site will be located at the downstream intersection of San Jose Creek and the ESGV Group boundary. The proposed sites for the ESGV Group are located on **Figure 2-1**, and are as follows:

- San Jose Creek at the crossing of the Pomona city line (ESGV_SJC_DS.)
- San Dimas Wash at the crossing of the San Dimas city line (ESGV_SDW_DS.)
- Walnut Creek Wash between Puddingstone dam and the jurisdictional boundary of San Dimas (ESGV_WCW_DS.)

Given that Puddingstone Reservoir discharges to Walnut Creek Wash, that Puddingstone Reservoir is under the jurisdiction of Los Angeles County, and that lake processes can affect the concentration of constituents in the downstream receiving waters, the ESGV Group is concerned that conducting receiving water monitoring within Walnut Creek Wash would not be representative of the ESGV Group's MS4 discharge. Walnut Creek Wash is proposed as an optional site to be evaluated by the ESGV Group if downstream exceedances are measured and the decision is made to further determine the contribution from the WMP area. As Puddingstone Reservoir is in a County park and operated by the LACFCD, the ESGV Group Members will not

monitor within the Lake. The LTA site on Live Oak Wash will also serve to monitor discharges to Puddingstone Reservoir.

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD.

All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed by two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Photographs of the San Jose Creek TMDL site, ESGV_SJC_DS, are included in **Figure 2-5** and **Attachment B**.

Figure 2-5.
San Jose Creek TMDL site ESGV_SJC_DS Looking Upstream

A TMDL monitoring site is located at the intersection of San Dimas Wash and the ESGV Group boundary, indicated as site ESGV_SDW_DS on **Figure 2-1**. Photograph of the San Dimas Wash site are included in **Figure 2-6** and **Attachment B**.

Figure 2-6.
San Dimas Wash TMDL Site, ESGV_SDW_DS, Looking Downstream

An optional TMDL monitoring site is located on Walnut Creek Wash. If the ESGV Group decides to determine the contribution from the WMP area, the site will be triggered. The TMDL monitoring site will be located between the Puddingstone dam and the ESGV Group boundary downstream of N Reeder Street, indicated as site ESGV_WCW_DS on **Figure 2-1**. A photograph of a potential location for ESGV_WCW_DS is presented as **Figure 2-7**.

Figure 2-7.
Walnut Creek Wash TMDL Potential Site Looking Upstream.

2.4 MONITORED PARAMETERS AND FREQUENCY OF MONITORING

The MRP clearly defines the default required parameters and frequency for receiving water monitoring. A general summary of the frequency of monitoring and of parameters identified in the MRP for receiving water monitoring are presented in **Table 2-1**. The program will generally operate three wet weather events per year, including the first significant rain event of the storm year. For the San Jose Creek receiving water site a fourth storm will be targeted for monitoring metals and associated constituents. After the first year of monitoring at the San Jose Creek site, the data will be evaluated to determine if three storms provide sufficient information. If three storms are found to provide sufficient information, a reduction in monitoring to three storms per year will be requested from the Regional Board. Additionally, the program will operate two dry weather events per year, conducted in January and July. However, not all parameters will be monitored each event. The frequency of monitoring for wet and dry events is specified by site in **Table 2-1**. For toxicity, monitoring will be conducted during two wet weather events per year and during the one dry weather event that takes place coincident with the summer dry weather sampling event. The ESGV Group does not have historical flow data to determine base flow conditions within the Group's receiving waters. Therefore, during the first year of monitoring, wet weather conditions will be defined as when greater than 0.25 inches of precipitation has fallen within the previous 24-hour period. Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will be assessed with applicable water quality objectives after the first year of LTA monitoring. Analytical methods, detection limits, sampling methods, and sample handling procedures are detailed in **Attachment D**. In addition, details regarding the collection of quality assurance/quality control (QA/QC) samples are outlined in **Attachment D**.

Initially, at the San Jose Creek site, Metals TMDL ambient monitoring will be conducted at a frequency of four wet and two dry events. The Metals TMDL specifies four wet weather events annually for effectiveness monitoring. However, after the first year of monitoring at the San Jose Creek site the data will be evaluated to determine if reducing monitoring frequency to three events per year will provide sufficient data. If three events of wet-weather data can provide sufficient data, the ESGV Group will request a reduction in sampling frequency. If a reduction in sampling is appropriate, the frequency of supporting parameters will likewise be reduced. The supporting parameters include: flow and field parameters, TSS, and hardness.

Table 2-1.
Annual Frequency and Duration of Receiving Water Monitoring
During Wet and Dry Weather Conditions

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	**San Jose Creek**	**San Dimas Wash**	**Walnut Creek Wash**
Flow and field parameters(1)	3/2	4/2	3/2	3/2
Table E-2 Pollutants(2)	1(3)/1(3)	(4)	(4)	(4)
Toxicity	2/1	(5)/0		
TIE Identified Pollutants	(6)	(6)	(6)	(6)
TSS and Hardness	3/2	4/2	3/2	3/2
Alkalinity	3/2	3/2		
Ammonia	3/2	3/2		
TKN or Organic N, Nitrate, Nitrite,	3/0			

Constituent	Annual Frequency (number wet events/number dry events)			
	Live Oak Wash	San Jose Creek	San Dimas Wash	Walnut Creek Wash
Orthophosphate, and Total Phosphorus				
TDS, Chloride, and Sulfate	2/2	0/2	0/2	0/2
Mercury	2/2			3/2
Methylmercury	2/0			
TOC	2/0			
Total PCBs(7), Total Chlordane, Dieldrin, and Total DDTs(8)	1(9)/0			
Copper(10)	3/2	4/2	3/2	3/2
Lead(10)	3/2	4/2	3/2	3/2
Zinc(10)	3/2	4/2	3/2	3/2
Selenium		4/2		3/2
E. coli	3/2	3/2	3/2	3/2
Cyanide		3/2		
PAHs(11)		3/2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, and specific conductivity.

2 All pollutants identified in Table E-2 of the MRP that are not otherwise addressed by monitoring at the LTA.

3 Monitoring frequency only applies during the first year of monitoring. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) for its respective test method or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective, additional monitoring will be conducted under condition with observed exceedance (i.e., the monitoring frequency will become 3/2 if exceedances are observed during dry and wet weather, the monitoring frequency will become 3/0 if exceedances are observed during wet weather only, and the monitoring frequency will become 0/2 if exceedances are observed during dry weather only).

4 Pollutants identified for additional monitoring from Table E-2 under condition with observed exceedance in first year. For constituents with no measured exceedances and not otherwise addressed by monitoring at the LTA station, monitoring will discontinue.

5 Where wet weather monitoring of the San Gabriel River at the mass emission site S14 or the LTA site observes toxicity and a subsequent TIE is inconclusive, wet weather toxicity will be initiated. Where dry weather monitoring by either LACSD of San Jose Creek or the ESGV at the LTA site observes toxicity and a subsequent TIE is inconclusive, dry weather toxicity will be initiated. Toxicity monitoring will commence at the scheduled event following notification of TIE results.

6 Where wet weather monitoring of the San Gabriel River at the mass emission site S14 or the LTA site observes toxicity and a subsequent TIE identifies a pollutant(s), the pollutant(s) will be added to the wet weather monitoring list. Where dry weather monitoring by either LACSD of San Jose Creek or at the LTA site observes toxicity and a subsequent TIE identifies a pollutant(s), the pollutant(s) will be added to the dry weather monitoring list. The monitoring for the additional pollutant(s) will commence at the scheduled event following notification of TIE results.

7 PCBs includes analyses for all aroclor species when analyzed in water and the following 54 PCB congeners when analyzed in water or suspended solids: 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95,

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97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209

8 DDT is defined as the sum of 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

9 Suspended sediment samples will be collected and analyzed for listed parameters, in addition to water column concentrations.

10 Total and dissolved.

11 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

Data collected through monitoring will be reviewed and changes to the constituents and frequencies listed in **Table 2-1** will be discussed in the annual report and implemented starting no later than the first scheduled CIMP event of the next monitoring year, which corresponds to the first applicable event after July 1 following the annual report submittal. The processes for determining appropriate changes to monitoring are listed in **Section 10**.

2.5 MONITORING COORDINATION

The ESGV Group is participating with other groups in the San Gabriel River WMA and is coordinating required sampling downstream of the WMP area with the respective MS4 groups and LACSD. All responsible parties to the Metals TMDL are equally responsible for performing the specified monitoring throughout the watershed. Monitoring for the Metals TMDL and the Harbors Toxics TMDL is required in San Gabriel River Reaches 1, 2, and 3; and the San Gabriel River Estuary. Given that these water bodies are downstream of the WMP area, TMDL monitoring sites within the WMP area will be utilized to assess the ESGV Group contribution to downstream water bodies. The LTA monitoring site also will be utilized to assess the potential level of contribution to downstream water bodies. The Metals TMDL sites outside the WMP will be located and monitored as follows:

- San Gabriel River Reach 4 TMDL site will be located at Ramona Blvd and monitored by the USGR EWMP Group.
- San Gabriel River Reach 5 TMDL site will be assessed through two outfall sites by the Rio Hondo/San Gabriel River EWMP Group.
- San Jose Creek Reach 1 TMDL site will be at the LACSD R-10 monitoring site located upstream of the Discharge Serial No. 002 discharge point for LACSDs' San Jose Creek Water Reclamation Plant (WRP). Monitoring in dry weather will be by the LACSD and by the USGR EWMP Group in wet weather.
- Walnut Creek Wash TMDL site will be located in the unlined portion of Walnut Creek Wash, just upstream of the confluence with the San Gabriel River. Monitoring will be conducted by the USGR EWMP Group.

Opportunities potentially exist to coordinate with other watershed management groups for receiving water monitoring. The planned coordination to achieve the required Metals TMDL monitoring is an example of the coordination opportunities. The CIMP is written to outline the monitoring requirements to assess the ESGV Group MS4. Coordination with other watershed management groups may occur in the future, where data from other programs may be used to fulfill ESGV Group requirements.

2.6 RECEIVING WATER MONITORING SUMMARY

Three sites are selected in the WMP area to address the receiving water monitoring program objectives. An additional optional site will be triggered by the ESGV Group in the event it becomes necessary to evaluate the potential contribution of constituents from the WMP area to downstream areas. The optional site will be triggered if downstream exceedances are observed for constituents not already being addressed by the WMP area. The receiving water sites are summarized in **Table 2-2**. None of the identified sites have been monitored as part of historical or existing monitoring programs. The County and LACFCD will perform monitoring in Puddingstone Reservoir. Estuary monitoring will be fulfilled by LACSD during dry weather and the Lower San Gabriel River EWMP group during wet weather per the Harbor Toxics TMDL to assess the potential of metals contribution to toxicity.

Table 2-2.
Summary of ESGV Group Receiving Water Monitoring Sites

Site ID	Water Body	Coordinates		Monitoring Type	
		Latitude	Longitude	LTA	TMDL
ESGV_LOW_DS	Live Oak Wash	34.094064	-117.792934	X	X
ESGV_SJC_DS	San Jose Creek	34.032233	-117.824894		X
ESGV_SDW_DS	San Dimas Wash	34.121341	-117.820088		X
ESGV_WCW_DS(1)	Walnut Creek Wash	34.086672	-117.845592		X

1 Optional site to be triggered by the ESGV Group to evaluate contribution of constituents from the WMP area in the event downstream exceedances are observed

A summary of how the ESGV receiving water monitoring program meets the intended objectives of the receiving water monitoring program outlined in Part II.E.1 of the MRP is presented in **Table 2-3**.

Table 2-3.
Summary of Receiving Water Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether the RWLs are being achieved.	○ Four total receiving water monitoring sites. Three planned sites and one optional site. ○ Receiving water monitoring sites located as required by TMDLs. ○ Constituents added for monitoring based on the water quality priorities (i.e., the constituents at the highest risk of exceeding RWLs).
Assess trends in pollutant concentrations over time, or during specified conditions.	○ LTA station will be established within the WMP area. ○ Monitoring during dry weather and wet weather ○ Constituents added for monitoring based on the water quality priorities.
Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.	○ At least one monitoring site located in the majority of water bodies specified in the Basin Plan. ○ Aquatic toxicity monitoring to be conducted during dry and wet weather. ○ Constituents added for monitoring based on the water quality priorities.

3 MS4 Database

The objective of the MS4 database is to geographically link the characteristics of the outfalls within the WMP area with watershed characteristics including: subwatershed, water body, land use, and effective impervious area. The information will be compiled into geographic information systems (GIS) layers.

3.1 PROGRAM OBJECTIVES

A GIS-based database of the MS4 storm drains and outfalls is required as part of the CIMP. The database structure must accommodate the following data fields:

1. Surface water bodies within the ESGV Group
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
4. Effective Impervious Area overlay
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry weather diversions
8. The location of all major MS4 outfalls within the ESGV Group. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually)
10. Storm drain outfall catchment areas for each major outfall within the ESGV Group
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a) Ownership
    b) Coordinates
    c) Physical description
    d) Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    e) Determination of whether the outfall conveys significant non-stormwater discharges.
    f) Stormwater and non-stormwater monitoring data

Available GIS data was reviewed to determine which components were available to populate the database for submittal with the CIMP. Available information includes components 1, 2, 3, 5, 6, 7, and 11.b. For the remaining components (4, 8, 9, 10, 11.a, 11.c, 11.d, 11.e, and 11.f) the ESGV Group will gather the information upon implementation of the non-stormwater outfall screening program in the summer of 2014. All outstanding data will be collected upon

completion of the non-stormwater outfall screening. Based on the review of the GIS data, the components were divided into two categories: (1) available information being submitted with the CIMP, and (2) pending information that will be submitted after completion of the non-stormwater outfall and screening and monitoring program.

3.2 AVAILABLE INFORMATION

The following data are being submitted as a map and/or in a database concurrently with the CIMP (note, the numbering corresponds to the item number in the Permit list):

1 Surface water bodies within the ESGV Group.
2. Sub-watershed (HUC-12) boundaries.
3. Land use overlay.
5. Jurisdictional boundaries.
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes).
7. The location of all dry weather diversions.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    b. Coordinates

3.3 PENDING INFORMATION

Collecting the following data is an ongoing effort. The data are not currently available for submittal with the CIMP. The MS4 database will be populated as the data are collected. As the data are collected the database will be updated. The annual reports will include the updated database. The fields that will be updated through implementation of the CIMP include:

4. Effective impervious area overlay.
8. The location of all major MS4 outfalls within the Group Members' jurisdictional boundary.
9. Notation of outfalls with significant non-stormwater discharges (to be updated annually).
10. Storm drain outfall catchment areas for each major outfall within the Group Member's jurisdiction.
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time

e. Determination of whether the outfall conveys significant non-stormwater discharges.

f. Stormwater and non-stormwater monitoring data.

The information necessary to determine pending elements will be generated as an outcome of implementing the non-stormwater outfall program as noted in the **Table 3-1.** footnotes. A schedule for completing each of the elements is provided. As the data become available, they will be entered into the GIS and water quality databases. Each year, the storm drains, channels, outfalls, and associated databases will be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharge. Updates will be included as part of the annual reporting to the Regional Board.

Table 3-1.
MS4 Database Elements to Be Developed

Database Element	To Be Developed	Date of Submission
Effective Impervious Area (EIA) overlay.	---	As Available
Notation of outfalls with significant non-stormwater discharges (to be updated annually).	X[(1)]	December 2015
Detailed analysis of storm drain outfall catchment areas for any new outfall monitoring locations, outfalls identified as having significant non-stormwater discharges, and outfalls addressed by structural best management practices (BMPs).	X[(2)]	Ongoing
Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time	X[(3)]	December 2015
Determination of whether the outfall conveys significant non-stormwater discharges.	X[(1)]	December 2015
Stormwater and non-stormwater monitoring data	X[(4)]	Ongoing

1. The determination of significant will be made after the initial screening process outlined in this CIMP is completed.
2. Storm drain outfalls were linked in the database to the modeling subwatersheds to provide information on the contributing areas. Detailed analysis of storm drain outfall catchment areas for the stormwater outfall monitoring sites have been developed and additional detailed analysis for any new outfall monitoring locations, outfalls identified as having significant nonstormwater discharges, and outfalls addressed by structural BMPs will be conducted as needed.
3. These data will be gathered as part of the screening and monitoring program and will be added to the database as they are gathered.
4. These data will be gathered as part of the screening and monitoring program and will be added to a separate water quality database as they are gathered.

4 Stormwater Outfall Monitoring

Stormwater outfall selection and monitoring requirements are discussed below.

4.1 PROGRAM OBJECTIVES

Stormwater outfall monitoring of discharges from the MS4 support meeting three objectives including:

- Determine the quality of stormwater discharge relative to municipal action levels.
- Determine whether stormwater discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs.
- Determine whether the discharge causes or contributes to an exceedance of receiving water limitations.

4.2 STORMWATER OUTFALL MONITORING SITES

The primary criteria for the stormwater outfall monitoring program is selecting monitoring sites that are representative of the range of land uses in the WMA and provide accurate data for measuring flows and characterizing pollutant loads. The Permit provides default requirements for one outfall site per jurisdiction per HUC-12. The HUC-12 equivalent drainage areas are used in the analysis and represent the United States Geological Survey (USGS) HUC-12s modified to account for the MS4 system. The Regional Board approved the HUC-12 equivalent drainages for use in the WMP and CIMP process. The default procedure in the Permit was modified to select one outfall per HUC-12. The Permit allows an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. To facilitate the approval of the outfall selection process, the proposed process is demonstrated to achieve equivalent monitoring in **Attachment E**. The following subsections outline the approach to meet the MS4 Permit requirements related to stormwater outfall monitoring.

There are four HUC-12s within the WMP area that include MS4 serving the Group Members. The San Dimas Wash HUC-12 covers a minor portion of the WMP area and is similar in land use to the neighboring Big Dalton Wash HUC-12. As a result, no stormwater outfall monitoring site will be located in the San Dimas Wash HUC-12. A representation of the WMP area with highlighted HUC-12 areas is presented in **Figure 4-1**. The selected monitoring sites are shown on the Figure. Field verification of the sites was performed on December 26, 2013 and January 17, 2014.

One monitoring site for each of the remaining HUC-12s that include MS4 will be monitored. The three stormwater outfall monitoring sites are presented in **Figure 4-1**. The selected sites are representative of the land uses within each respective HUC-12. The catchment areas for each

selected drain are displayed with land use in **Figure 4-2**. The data collected at the monitored outfalls will be considered representative of all MS4 discharge within the respective HUC-12. The resulting data will be applied to all Group Members represented by the site, regardless of whether a site is located within a particular jurisdiction or received flow from that land area. Compliance for Group Members with WQBELs and RWLs may be based on comingled discharges or data not collected within an individual jurisdiction.

Figure 4-1.
HUC-12 Drainage Areas Corresponding to the WMP Area.

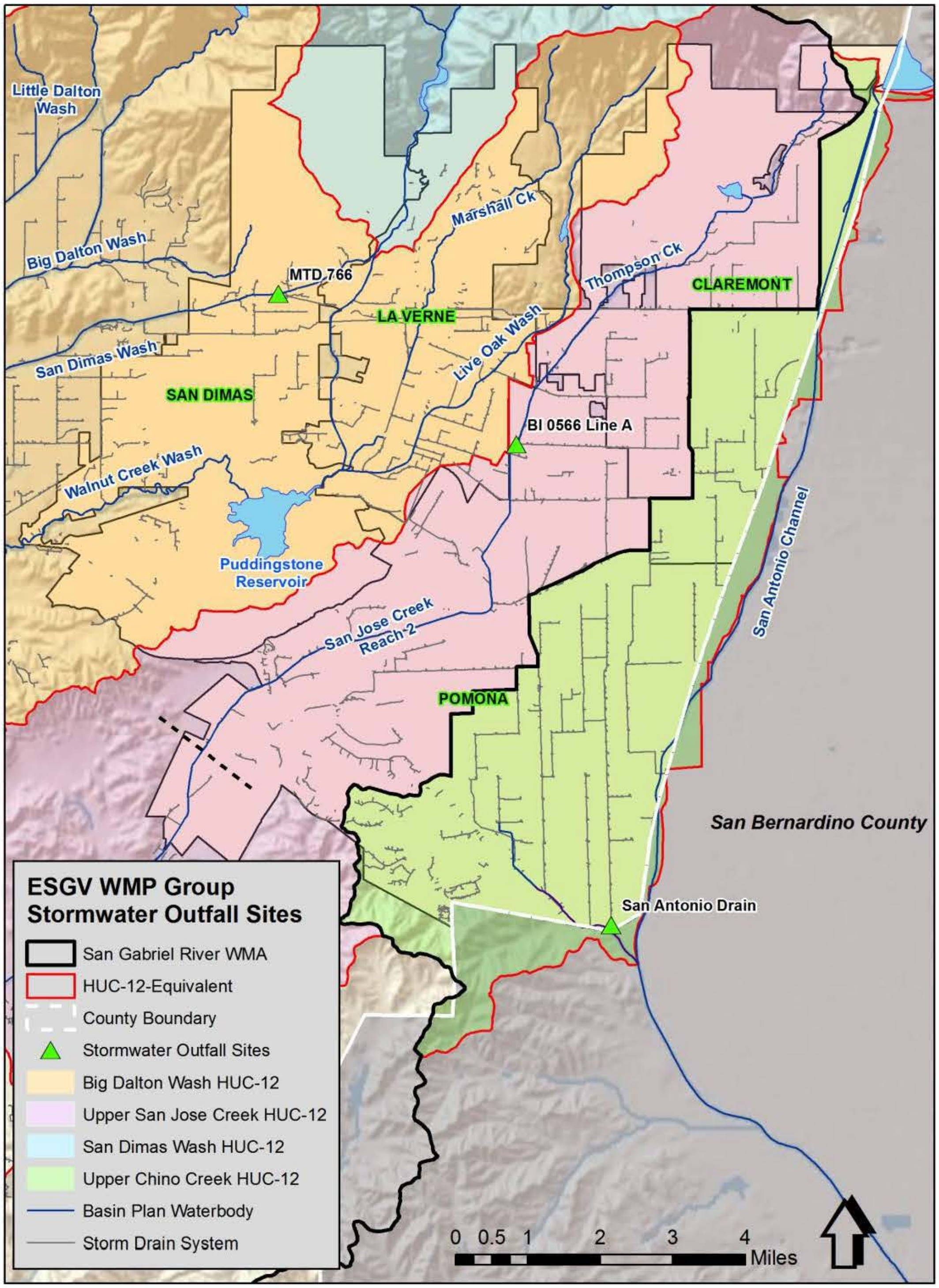

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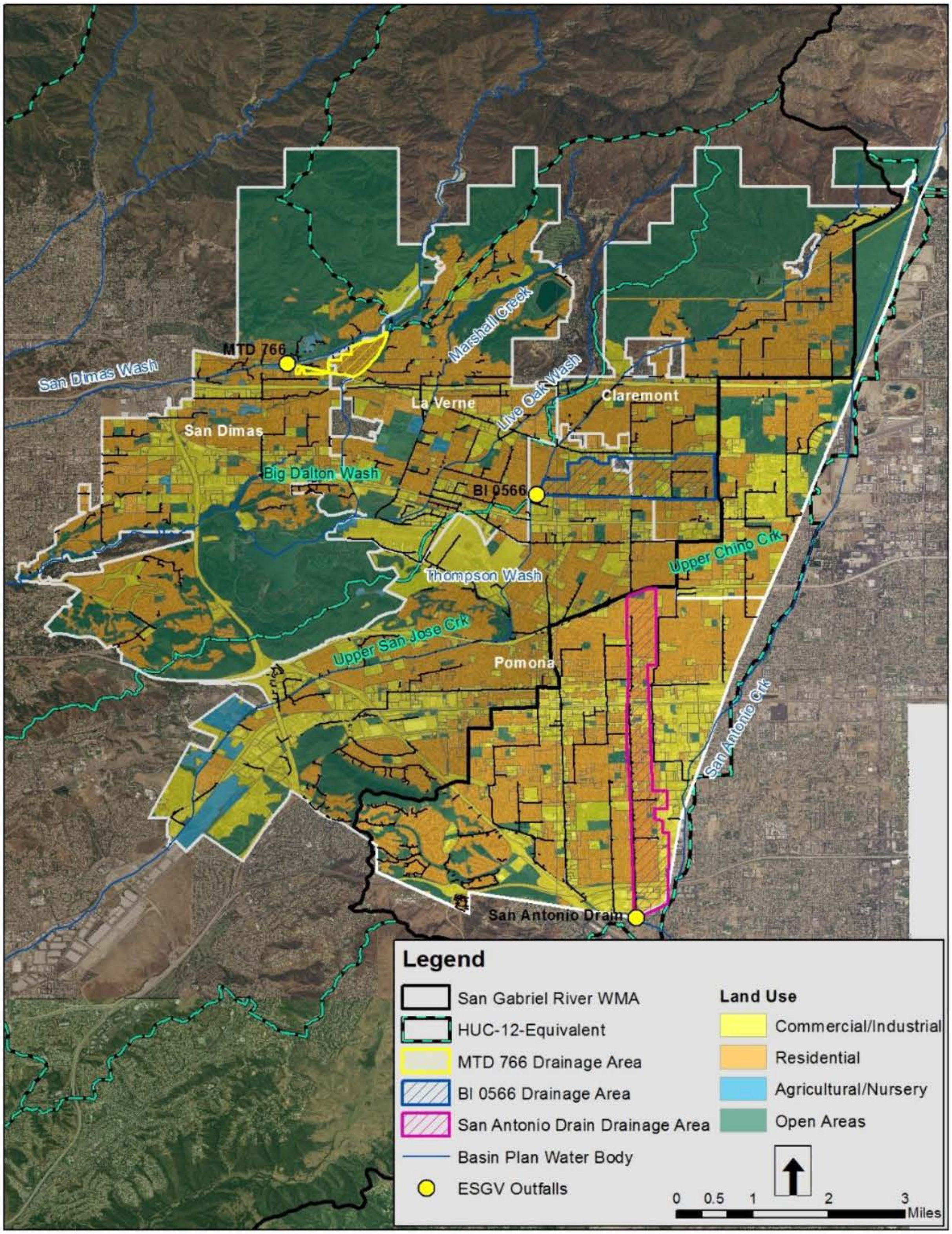
Figure 4-2.
Stormwater Outfall Monitoring Sites



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The stormwater outfall monitoring sites in the ESGV WMP area are summarized in **Table 4-1**. The land uses within the outfall catchment area for the selected drains are incorporated in **Table 4-2**.

Table 4-1.
Summary of Stormwater Outfall Monitoring Sites in the ESGV WMP Area

HUC-12	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Upper San Jose Creek	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468
Upper Chino Creek	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

1 Drain eventually discharges to water body.
2 Manhole location.

Table 4-2.
Relative Land Use Area within Drain Area to Stormwater Outfall Sites

HUC-12	Area	Percent of Land Area[1]			
		Res	Com/Ind	Ag/Nur	Open
Big Dalton Wash	HUC-12[2]	68	23	2	6
	MTD 766	87	12	1	<1
Upper San Jose Creek	HUC-12[3]	66	29	1	4
	BI 0566 Line A	76	22	<1	2
Upper Chino Creek	HUC-12	71	33	<1	5
	San Antonio Drain Unit 1	71	27	<1	2

1 Land use classifications include: residential (res), commercial and industrial (com/ind), agriculture and nursery (ag/nur), and open space (open). Totals correspond to the percent of the MS4 area considered in the WMP.
2 Big Dalton Wash HUC-12 includes Puddingstone Reservoir and County Park, downstream of the selected outfall. The catchment area is similar to the HUC-12 land use upstream of Puddingstone.
3 Includes portion of the Angeles National Forest. Land use of HUC-12 over MS4 area similar to selected drain catchment.

The stormwater outfall monitoring sites for the three major HUC-12s that cover the ESGV Group are presented in the following subsections. Photographs of each of the stormwater outfall monitoring sites are included in **Attachment B**.

While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety

issues under storm conditions. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites would need to be selected. To facilitate switching outfall locations, alternate sites for each HUC-12 are listed in **Attachment F**. The alternate sites would only become active if the original selection was deemed unrepresentative of the MS4 discharge in the HUC-12.

4.2.1 Big Dalton Wash HUC-12

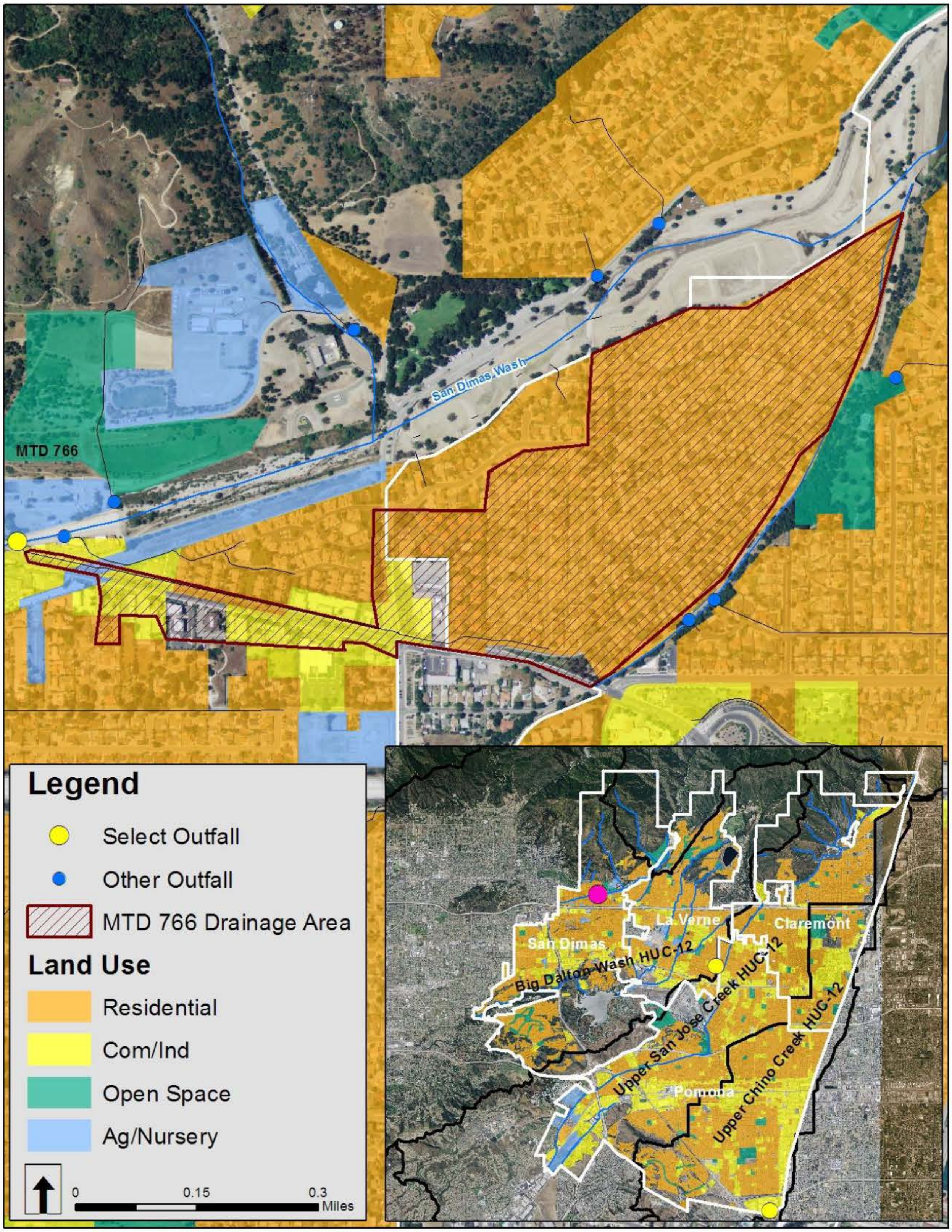
Big Dalton Wash is the largest of the three main HUC-12s for the ESGV Group, and it primarily covers the cities of San Dimas and La Verne. Primary land use types include: 87% residential; 8% open space; and 12% commercial/industrial. The large area of open space in the Big Dalton Wash HUC-12 is primarily due to land associated with the Puddingstone Reservoir which is under the jurisdiction of the County and LACFCD, and not a part of the ESGV Group. Relevant details for the stormwater outfall monitoring site in the Big Dalton Wash HUC-12 are presented in **Table 4-3**.

Table 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	Round	Reinforced Conc. Pipe	34.12417	-117.80215

The primary factor contributing to the selection of the MTD 766 site is its representativeness of primary land uses within its estimated drainage area with respect to the HUC-12. The outfall, estimated drainage area, and land uses are shown on **Figure 4-3**. Other factors that contributed to the selection of the MTD 766 site include space for the placement of a permanent sampling station (if desired), safe and easy access, and all public property to access sampling equipment.

Figure 4-3.
Stormwater Outfall Monitoring Site – Big Dalton Wash HUC-12



4.2.2 Upper San Jose Creek HUC-12

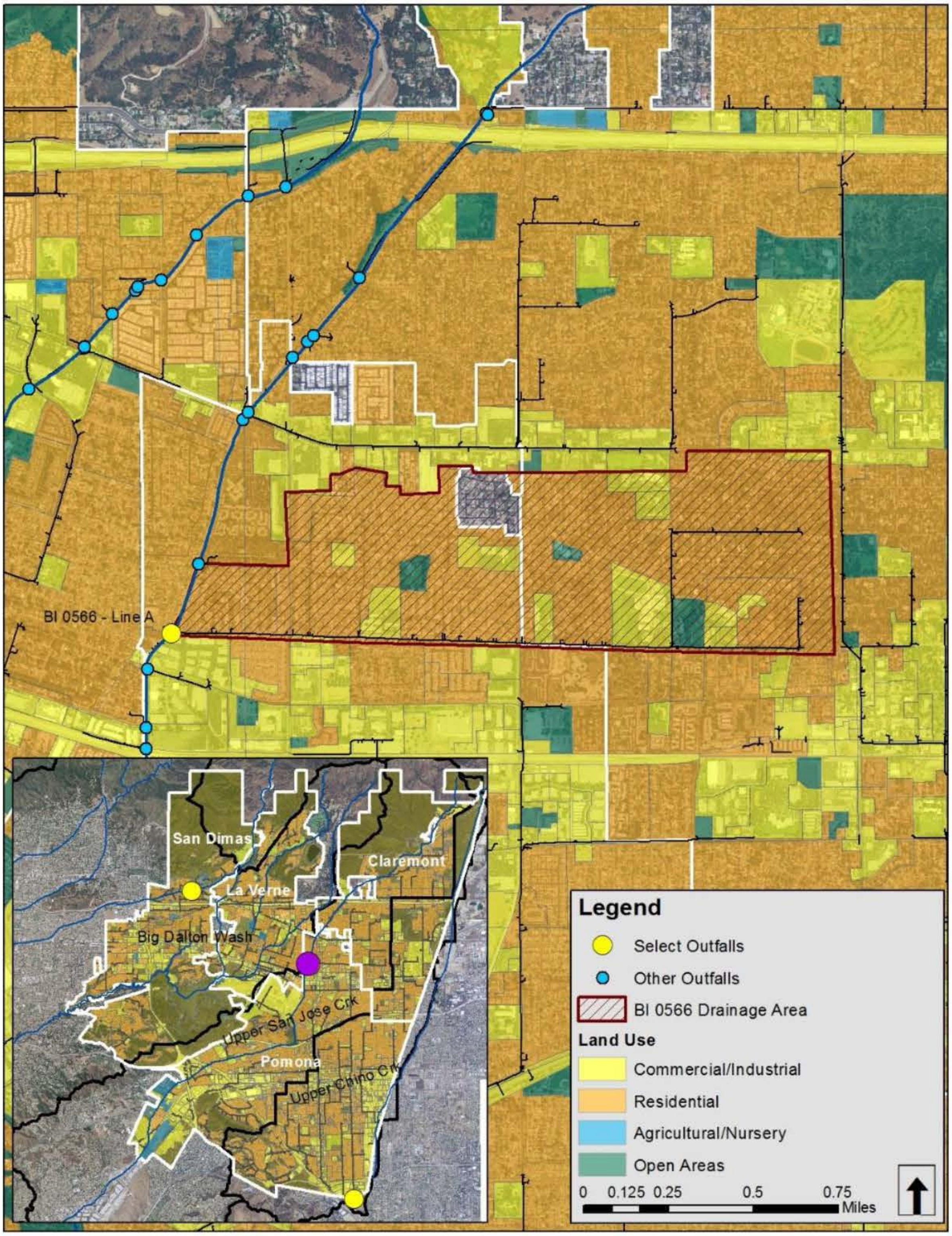
Upper San Jose Creek is the second largest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont. Primary land use types include: 66% residential; 29% commercial/industrial; and 4% open space. Relevant information for the stormwater outfall monitoring site in the Upper San Jose Creek HUC-12 are detailed in **Table 4-4**.

Table 4-4
Outfall monitoring Site – Upper San Jose Creek HUC-12

HUC-12	City	Drain Name	Size	Shape	Material	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	Square or Rectangle	Reinforced Conc. Box	34.09926	-117.75468

The primary factor contributing to the selection of the BI 0566 Line A site is the representativeness within its estimated drainage area of the surrounding HUC-12 with respect to the primary land uses. The outfall location, estimated drainage area, and land uses are displayed on **Figure 4-4**. Other factors that contributed to the selection of the BI 0566 Line A site include available space for a permanent sampling station, if determined necessary, safe and easy access, all public property, availability of a safe and accessible upstream manhole that could serve as an alternate sampling location if the outfall could not be directly sampled, and receipt of drainage from both the Cities of Claremont and Pomona. Bacteria monitoring data collected at BI 0566 Line A will also be used to evaluate compliance with the Santa Ana River Bacteria TMDL per the Bacteria TMDL monitoring outlined in **Attachment A**.

Figure 4-4.
Stormwater Outfall Monitoring Site – Upper San Jose Creek HUC-12



4.2.3 Upper Chino Creek HUC-12

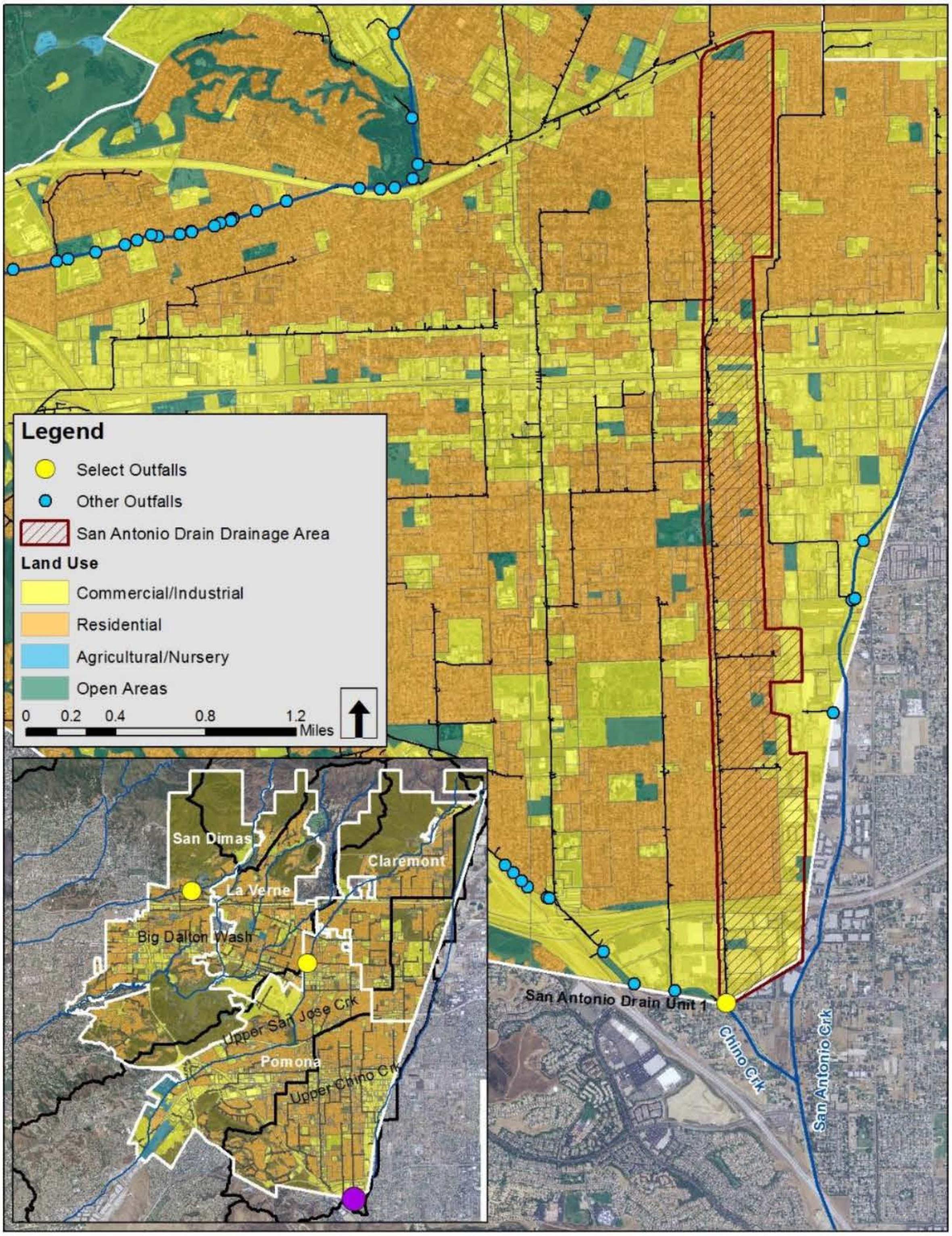
Upper Chino Creek is the smallest of the three main HUC-12 for the ESGV Group. It primarily covers the cities of Pomona and Claremont, but also covers minor portions of jurisdictions outside of the ESGV Group. Primary land use types include: 71% residential; 33% commercial/industrial; and 5% open space. **Table 4-5** details relevant information for the stormwater outfall monitoring site in the Upper Chino Creek HUC-12.

Table 4-5
Stormwater Outfall monitoring Site – Upper Chino Creek HUC-12

HUC-12	City	Name	Size	Shape	Material	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	Square or Rectangle	Reinforced Concrete Box	34.01976	-117.73575

The primary factor contributing to the selection of the San Antonio Drain Unit 1 site is its representativeness within its estimated drainage area with respect to the primary land uses of the HUC-12. The outfall, drainage area, and respective land uses are shown on **Figure 4-5**. Because the outfall is located outside of the WMP area, sampling will occur at the nearest upstream manhole. Other factors that contributed to the selection of the San Antonio Drain Unit 1 site include being located on a street with a low volume of traffic, being located on a street large enough to where traffic can easily be diverted around the sampling location without lane closure, safe and easy access for set-up and tear-down of autosampling equipment, and all public property.

Figure 4-5
Stormwater Outfall Monitoring Site – Upper Chino Creek HUC-12



4.3 MONITORED PARAMETERS AND FREQUENCY

Outfalls discharging to flowing water bodies will be monitored for all required constituents during three storm events per year concurrently with receiving water monitoring, with the exception of toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a toxicity identification evaluation (TIE) on the observed receiving water toxicity test was inconclusive. The requirements for monitored constituents at each outfall are outlined in the MRP (Part VIII.B.1.c). Additionally, parameters in Table E-2 of the MRP, listed in **Attachment C**, will not be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. Parameters and frequency of stormwater monitoring are presented in **Table 4-6**.

Table 4-6.
Summary of MS4 Permit Required Stormwater Outfall Monitoring Parameters

Constituent	Annual Frequency (number of wet events per year)		
	Big Dalton Wash HUC-12 Site	Upper San Jose Creek HUC-12 Site	Upper Chino Creek HUC-12 Site
	San Dimas Wash	Thompson Creek	Chino Creek
Flow and field parameters[1]	3	3	3
Pollutants identified in Table E-2 of the MRP	[2]	[2]	
TSS and Hardness	3	3	3
Alkalinity	3	3	
Ammonia	3	3	
TKN or Organic N	3		
Nitrate+Nitrite	3		
Orthophosphate	3		
Total Phosphorus	3		
Total Mercury	3		
Methylmercury	3		
TOC	3		
Total and Dissolved Copper	3	3	3
Total and Dissolved Lead	3	3	3
Total and Dissolved Zinc	3	3	3
Selenium		3	
E. coli	3	3	
Cyanide		3	
PAH[3]		3	

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity, and TSS. The Permit lists Hardness as a field parameter, however, it is included as a laboratory measurement for consistency with receiving water.

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2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will not be conducted (i.e., monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, stormwater outfall monitoring will be conducted at the frequency specified in the MRP (i.e., monitoring frequency will become 3).

3 PAHs are defined as benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

4.4 STORMWATER OUTFALL MONITORING SUMMARY

A summary of how the stormwater outfall monitoring program meets the intended objectives of the stormwater outfall monitoring program outlined in Part VIII.A of the MRP is presented in **Table 4-7**.

Table 4-7.
Summary of Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of MS4 Permit.	○ Stormwater outfall monitoring sites chosen using a representative land use approach for HUC-12s. ○ Extensive list of constituents being collectively monitored at stormwater outfall monitoring sites.
Determine whether a Permittee's discharge is in compliance with applicable WQBELs derived from TMDL WLAs.	○ Stormwater outfall monitoring sites located in water bodies with applicable WQBELs. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the water quality priorities which includes constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ Stormwater outfall monitoring sites chosen to be representative of each HUC-12. ○ Monitoring frequency equal to receiving water monitoring frequency to enable determination of whether the Permittee's discharge is causing or contributing to any observed exceedances of water quality objectives in the receiving water. ○ Stormwater outfall monitoring sites chosen using a representative land use approach. ○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.

5 Non-Stormwater Outfall Screening and Monitoring Program

Objectives of the non-stormwater outfall monitoring include:

- Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs.
- Determine whether a discharge exceeds non-stormwater action levels.
- Determine whether a discharge contributes to or causes an exceedance of receiving water limitations.
- Assist in identifying illicit discharges.

Additionally, the outfall screening and monitoring process is intended to prioritize outfalls for assessment and, where appropriate, scheduling of BMPs to address the non-stormwater flows.

The non-stormwater outfall screening and monitoring program is focused on dry weather discharges to receiving waters from major outfalls. The Permit defines a "major outfall" to be a MS4 outfall that discharges from a single pipe with an inside diameter of at least 36 inches, or a MS4 outfall greater than 12 inches in diameter that receives water from 2 acres of land zoned for industrial activity. The program fills two roles; the first is to provide monitoring of whether the non-stormwater constituent load is adversely impacting the receiving water and the second is to assess whether the non-stormwater discharge is allowable. The non-stormwater outfall program is designed to be complimentary to the Illicit Connection/Illicit Discharge (IC/ID) MCM.

Additionally, the outfall screening and monitoring process is intended to meet the following objectives (Part IX.A of the MRP):

1. Develop criteria or other means to ensure that all outfalls with significant non-stormwater discharges are identified and assessed during the term of the Permit.
2. For outfalls determined to have significant non-stormwater flow, determine whether flows are the result of IC/IDs, authorized or conditionally exempt non-stormwater flows, natural flows, or from unknown sources.
3. Refer information related to identified IC/IDs to the IC/ID Elimination Program (Part VI.D.10 of the Permit) for appropriate action.
4. Based on existing screening or monitoring data or other institutional knowledge, assess the impact of non-stormwater discharges (other than identified IC/IDs) on the receiving water.
5. Prioritize monitoring of outfalls considering the potential threat to the receiving water and applicable TMDL compliance schedules.

6. Conduct monitoring or assess existing monitoring data to determine the impact of non-stormwater discharges on the receiving water.
7. Conduct monitoring or other investigations to identify the source of pollutants in non-stormwater discharges.
8. Use results of the screening process to evaluate the conditionally exempt non-stormwater discharges identified in Parts III.A.2 and III.A.3 of the Permit and take appropriate actions pursuant to Part III.A.4.d of the Permit for those discharges that have been found to be a source of pollutants. Any future reclassification shall occur per the conditions in Parts III.A.2 or III.A.6 of the Permit.
9. Maximize the use of resources by integrating the screening and monitoring process into existing or planned IMP and/or CIMP efforts.

In summary, the intent of the non-stormwater outfall program is to demonstrate that the Group Members are effectively prohibiting non-exempt or conditionally non-exempt discharges to receiving waters and to assess whether non-stormwater discharges are causing or contributing to exceedances of RWLs. By detecting, identifying, and eliminating illicit discharges, the program will demonstrate efforts by the ESGV Group to effectively prohibit non-stormwater discharges to and from the MS4. Where the discharges are deemed “significant”, the program will discern whether they are illicit, exempt, or conditionally exempt. Following the program procedures will allow determination of whether the discharges may be causing or contributing to exceedances of RWLs.

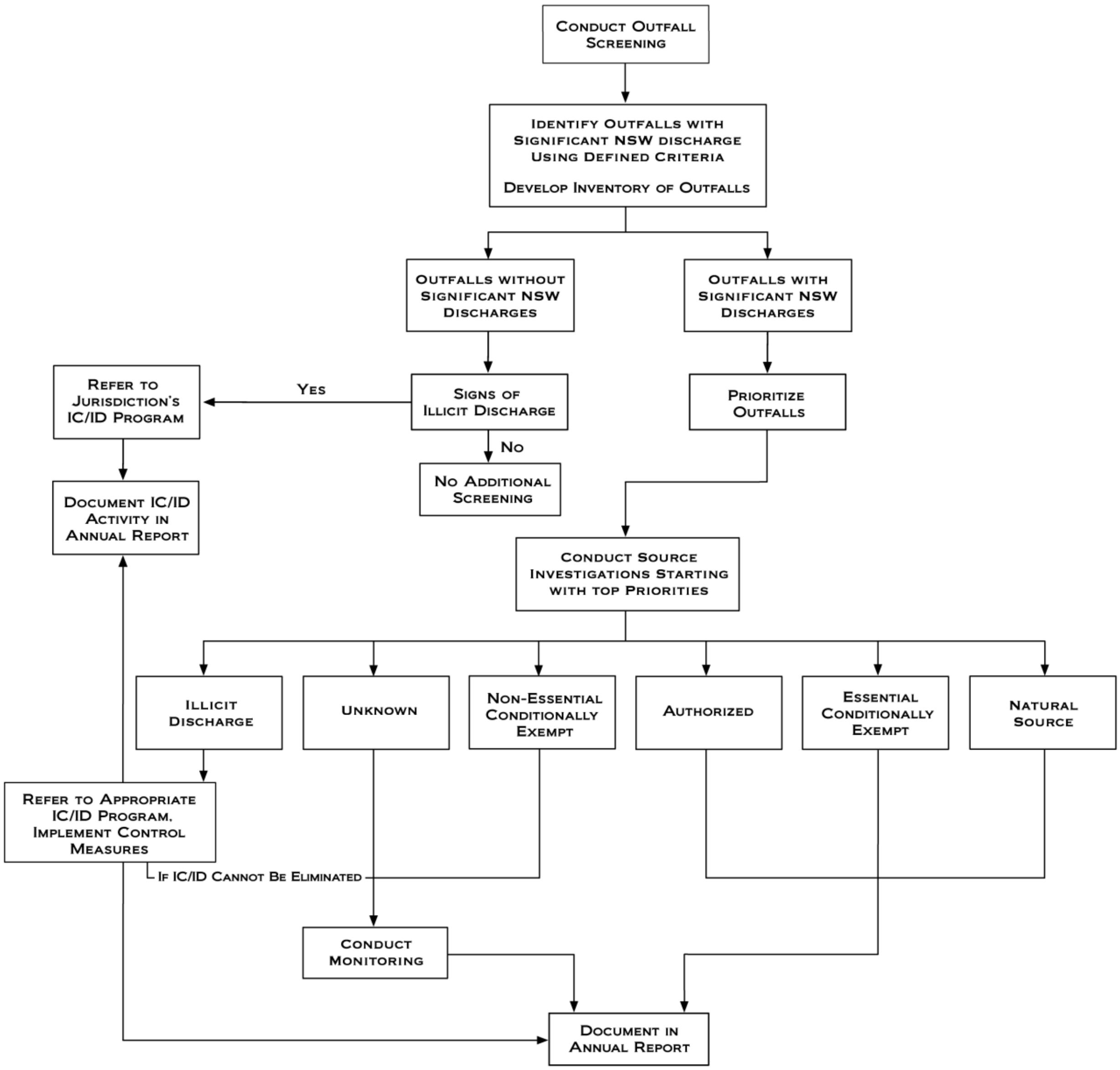
5.1 NON-STORMWATER OUTFALL SCREENING AND MONITORING PROGRAM

The Permit specifies a process for screening, investigating, and ultimately monitoring of outfalls with non-stormwater discharges. For the receiving water and stormwater monitoring programs, sufficient information is available, including guidance from the MRP, to support the identification of sites and begin the process of initiating water quality monitoring upon approval of this CIMP. For the non-stormwater outfall program, the MRP specifies a process for screening, investigating, and ultimately monitoring. The outfall screening and investigations must be completed prior to initiating monitoring at an individual outfall. A summary of the approach to address the required elements of the non-stormwater outfall program is presented in **Table 5-1**. A flowchart of the program is presented as **Figure 5-1**. Detailed discussion of each element is provided in the following subsections.

Table 5-1.
Non-Stormwater Outfall Screening and Monitoring Program Summary

Element	Description	Implementation Dates
Outfall screening	Implement a screening process to determine which outfalls exhibit significant discharges and those that do not require further investigation.	The screening process will begin summer 2014.
Identify outfalls with significant discharge	Based on data collected during the Outfall Screening process, identify MS4 outfalls with significant discharges.	
Inventory outfalls with discharge	Develop an inventory of major MS4 outfalls with known significant discharges and those requiring no further assessment.	
Prioritize source investigation	Use the data collected during the screening process to prioritize outfalls for source investigations.	
Identify sources of significant discharges	For outfalls exhibiting significant discharges, perform source investigations per the prioritization completed in the previous element.	Source investigations will be conducted for at least 25% of the outfalls with significant discharges by the end of December 28, 2015 and 100% by December 28, 2017.
Monitor discharges exceeding criteria	Using the information collected during screening and source investigation efforts, monitor outfalls that have been determined to convey significant discharges comprised of either unknown or non-essential conditionally exempt discharges, or continuing discharges attributed to illicit discharges are monitored.	First regularly scheduled dry weather monitoring event after the source investigation or after the CIMP has been approved by the Executive Officer, whichever is later.

Figure 5-1.
Non-Stormwater Outfall Screen and Monitoring Program Flow Diagram



5.2 IDENTIFICATION OF OUTFALLS WITH SIGNIFICANT NON-STORMWATER DISCHARGES

Based on a review of the information provided by the ESGV Group, the data necessary to identify significant non-stormwater discharges was not available. Thus, outfall screening will be initiated summer 2014 to collect the information to identify major outfalls exhibiting significant non-stormwater discharges and to develop the information needed for the inventory of outfalls with significant non-stormwater discharges. To help assess seasonality, additional screening will occur in late winter/early spring 2015, and late spring/early summer 2015. Screenings must be completed by early summer 2015 to allow sufficient time to determine which outfalls are significant and perform the assessments by the permit schedule. There are only three screening events planed. The MRP (Part IX.C.1) states that one or more of the following characteristics may determine significant non-stormwater discharges:

- Discharges from major outfalls subject to dry weather TMDLs.
- Discharges for which monitoring data exceeds non-stormwater action levels (NALs).
- Discharges that have caused or have the potential to cause may cause overtopping of downstream diversions.
- Discharges exceeding a proposed threshold discharge rate as determined by the Group Members.
- Persistence of flow.
- Discharges with higher flow rates.
- Larger outfall diameters.
- Discharges with odor, color, or cloudiness.
- Discharges into receiving waters with flows at the point of discharge.

To collect data for determining the significant non-stormwater outfalls, the ESGV Group will perform three dry-weather screenings. The initial screening provides the dual purpose of data collection for completing the outfall database and initial evaluation of outfalls. Each outfall in the EMWP area will be visited during the first screening. If no flow is observed for a particular outfall on both the first and second screenings, it would not be visited on the third event. A standard form will be used to collect characteristic data, consisting of:

- Receiving water channel bottom.
- Presence of water in channel.
- Visual estimate of discharge flow rate as follows:
    a. No flow,
    b. Trickle,
    c. Low flow (like from a garden hose), or
    d. High flow (like from a fire hose)
- Whether discharge ponds in the channel or reaches a flowing receiving water.
- Clarity.
- Presence of odors or foam.

Data collected through the screening process are the characteristics that will be utilized to determine which outfalls should be targeted for the next steps in the non-stormwater outfall program. The characteristics utilized will support a focus on discharges that have, or the potential to have, an impact on receiving waters. The receiving waters within the ESGV WMP area discharge to various downstream water bodies. The components of the outfall screening process are presented in **Table 5-2**.

The determination of significance will be made after the three screenings have been completed and the characteristics have been reviewed. Significant outfalls are persistent, so outfalls found to be flowing on only one event will be removed from consideration. Additionally, outfalls where the estimated flow was high on two or more screenings will be considered significant. Outfalls where turbid waters, or odors or foam were observed on two or more screenings will be referred to the jurisdiction's ICID program.

Table 5-2.
Approach for Establishing a Non-Stormwater Outfall Screening Process

Component	Description
Data Collection	Data include qualitative flow size, channel bottom, ponding of discharge, clarity, color, and odor. Any additional information needed to complete the inventory will be collected. Land use and permitted dischargers will be considered in the evaluation with field data to determine significant non-stormwater discharge.
Frequency	Three field screening events per outfall will be conducted. Visual information will be collected on all flowing drains greater than 12 inches in diameter.
Defining Significant Discharges	Will be determined after screening events are completed. Visual information from the screening, such as flow size persistent flow, flow condition in receiving water, may be considered to determine significant discharges. Land use information or SIC codes may also be considered to include only drains 12 to 36 inches in diameter from areas with industrial drainage.
Timeline	The non-stormwater outfall screening process will begin in the summer of 2014. Additional screenings will occur in winter 2014-2015 and late-Spring/early Summer 2015.

5.3 INVENTORY OF MS4 OUTFALLS WITH NON-STORMWATER DISCHARGES

An inventory of MS4 outfalls must be developed to identify those outfalls with dry weather discharge. The inventory is split into two major categories, those with known significant non-stormwater discharges, and those requiring no further assessment (Part IX.D of the MRP). If the MS4 outfall requires no further assessment, the inventory must include the rationale for the determination of no further action required. Rationale for a determination of no future action would be expected to include 1) the outfall does not have persistent flow; 2) the outfall does not have a significant non-stormwater discharge; or 3) discharges observed were determined to be exempt. The inventory would be included in a database generated by the ESGV Group as required by the MRP. Each year, the inventory must be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharges.

The following physical attributes of outfalls with significant non-stormwater discharges must be included in the inventory and is being collected as part of the screening process:

- Date and time of last visual observation or inspection.
- Outfall alpha-numeric identifier.
- Description of outfall structure including size (e.g., diameter and shape.)
- Description of receiving water at the point of discharge (e.g., natural, soft-bottom with armored sides, trapezoidal, concrete channel.)
- Latitude/longitude coordinates.
- Nearest street address.
- Parking, access, and safety considerations.
- Photographs of outfall condition.
- Photographs of significant non-stormwater discharge or indicators of discharge unless safety considerations preclude obtaining photographs.
- Estimation of discharge rate.
- All diversions either upstream or downstream of the outfall.
- Observations regarding discharge characteristics such as turbidity, odor, color, presence of debris, floatables, or characteristics that could aid in pollutant source identification.
- Flow condition in the receiving water at the point of discharge (dry, ponding, flowing, or tidal influence.)

5.4 PRIORITIZED SOURCE IDENTIFICATION

Once the major outfalls exhibiting significant non-stormwater discharges have been identified through the screening process and incorporated in the inventory, Part IX.E of the MRP requires that the ESGV Group prioritize the outfalls for further source investigations. The MRP identifies the following prioritization criteria for outfalls with significant non-stormwater discharges:

- Outfalls discharging directly to receiving waters with WQBELs or RWLs in the TMDL provisions for which final compliance deadlines have passed.
- All major outfalls and other outfalls that discharge to a receiving water subject to a TMDL shall be prioritized according to TMDL compliance schedules.
- Outfalls for which monitoring data exist and indicate recurring exceedances of one or more of the non-stormwater action levels (NALs) identified in Attachment G of the Permit.
- All other major outfalls identified to have significant non-stormwater discharges.

Data collected during the three screenings may be used to refine the determination of significance. Once the prioritization is complete, a source identification schedule will be developed. The scheduling will focus on the outfalls with the highest pollutant of concern loading rates first. Unless the results of the field screening justify a modification to the schedule in the MRP, the schedule will ensure that source investigations are completed on no less than 25% of the outfalls with significant non-stormwater discharges by December 28, 2015 and 100% by December 28, 2017.

5.5 SIGNIFICANT NON-STORMWATER DISCHARGE SOURCE IDENTIFICATION

The screening and source identification component of the program is used to identify the source(s) and point(s) of origin of the non-stormwater discharge. Based on the prioritized list of major outfalls with significant non-stormwater discharges, investigations will be conducted to identify the source(s) or potential source(s) of non-stormwater flows.

Source investigations will be conducted using site-specific procedures based on the characteristics of the non-stormwater discharge. Investigations could include:

- Gathering field measurements to characterize the discharge.
- Following dry weather flows from the location where they are first observed in an upstream direction along the conveyance system.
- Compiling and reviewing available resources including past monitoring and investigation data, land use/MS4 maps, aerial photography, and property ownership information.

Part IX.A.2 of the MRP requires the source investigation results be classified into one of four endpoints outlined as follows and summarized in **Table 5-3**:

A. <u>IC/IDs</u>: If the source is determined to be an illicit discharge, the procedures to eliminate the discharge consistent with IC/ID requirements must be implemented and document actions.
B. <u>Authorized or conditionally exempt non-stormwater discharges</u>: If the source is determined to be an NPDES permitted discharge, a discharge subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or a conditionally exempt essential discharge, the Group Members must document the source. For non-essential conditionally exempt discharges, the Group Members must conduct monitoring consistent with Part IX.G of the MRP to determine whether the discharge should remain conditionally exempt or be prohibited.
C. <u>Natural flows</u>: If the source is determined to be natural flows, the Group Members must document the source.
D. <u>Unknown sources</u>: The Group Members must conduct monitoring consistent with the MRP if a source is unknown.

Table 5-3.
Summary of Endpoints for Source Identification

Endpoint	Follow-up	Action Required by Permit
A. Illicit Discharge or Connection	Refer to IC/ID program	Implement control measures and report in annual report. Monitor if cannot be eliminated.
B. Authorized or Conditionally Exempt Discharges(1)	Document and identify if essential or non-essential	Monitor non-essential discharges
C. Natural Flows	End investigation	Document and report in annual report
D. Unknown	Refer to IC/ID program	Monitor

1 Discharges authorized by a separate NPDES permit, a discharge subject to a Record of Decision approved by USEPA pursuant to section 121 of CERCLA, or is a conditionally exempt non-stormwater discharge addressed by other requirements. Conditionally exempt non-stormwater discharge addressed by other requirements are described in detail in Part III.A. Prohibitions – Non-Stormwater Discharges of the Permit.

Where investigations determine the non-stormwater source to be authorized, natural, or essential conditionally exempt flows, the ESGV Group will conclude the investigation and move to the next highest priority outfall for investigation. Where investigations determine that the source of the discharge is non-essential conditionally exempt, an illicit discharge, or is unknown – further investigation may be conducted to eliminate the discharge or demonstrate that it is not causing or contributing to receiving water problems. In some cases, source investigations may ultimately lead to prioritized programmatic or structural BMPs. Where Group Members determine that they will address the non-stormwater discharge through modifications to programs or by structural BMP implementation, the ESGV Group will incorporate the approach into the implementation schedule developed for the WMP and the outfall can be lowered in priority for investigation, such that the next highest priority outfall may be addressed.

5.6 NON-STORMWATER DISCHARGE MONITORING

As outlined in the MRP, outfalls with significant non-stormwater discharges that remain unaddressed after source investigation shall be monitored to meet the following objectives:

A. Determine whether a discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs;
B. Determine the quality of a discharge exceeds non-stormwater action levels, as described in Attachment G of the Permit; and
C. Determine whether a discharge causes or contributes to an exceedance of receiving water limitations.

As identified in **Table 5-3**, outfalls that have been determined to convey significant non-stormwater discharges where the source investigations concluded that the source is attributable to a continued illicit discharge (Endpoint A), non-essential conditionally exempt (Endpoint B), or unknown (Endpoint D) must be monitored. Monitoring will begin at the first regularly scheduled dry weather event after completing a source investigation.

5.6.1 Non-Stormwater Outfall-Based Monitoring Sites

The outfall screening and prioritization approach will result in an inventory of outfalls. Where required, the non-stormwater discharge will be monitored per the Permit requirements. The monitoring is described in the following section.

5.6.2 Monitored Parameters and Frequency of Monitoring

The requirements for constituents to be monitored are outlined in the Part VIII.G.1.a-e of the MRP. Outfalls will be monitored for all required constituents except toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a Toxicity Identification Evaluation (TIE) on the observed receiving water toxicity test was inconclusive. Additionally, parameters in **Attachment C** will not be able to be identified as exceeding applicable water quality objectives until after the first year of LTA monitoring. A list of parameters applicable to non-stormwater outfall monitoring, based on which receiving water the discharge is to, is presented in **Table 5-4**. Also, constituents associated with suspended sediments transported during wet weather (i.e., PCBs, DDTs, dieldrin, and chlordane) will not be monitored during non-stormwater outfall monitoring.

Table 5-4.
Summary of Non-Stormwater Outfall Monitoring Parameters

Constituent	Subwatershed Annual Frequency (Dry events per year)							
	San Dimas Wash	Walnut Creek Wash	Puddingstone Channel	Marshall Creek	Live Oak Wash	San Jose Creek	Chino Creek	San Antonio Creek
Flow and field parameters(1)	2	2	2	2	2	2	2	2
Pollutants identified in Table E-2 of the MRP	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Hardness and TSS	2	2	2	2	2	2	2	2
Alkalinity		2	2	2	2	2		
Ammonia		2	2	2	2	2		
Total Mercury		2	2	2	2			
Total and Dissolved Copper	2	2	2	2	2	2	2	2
Total and Dissolved Lead	2	2	2	2	2	2	2	2
Total and Dissolved Zinc	2	2	2	2	2	2	2	2
Selenium						2		
E. coli	2	2	2	2	2	2	2	2
Cyanide						2		
PAHs(3)						2		
TDS	2	2	2	2	2	2		
Sulfate	2	2	2	2	2	2		
Chloride	2	2	2	2	2	2		

1 Field parameters are defined as dissolved oxygen, pH, temperature, specific conductivity. Hardness is specified as a field measurement in the Permit, however to be consistent with the receiving water, it will be measured in the laboratory.

2 For pollutants identified in Table E-2 of the MRP (**Attachment C)** that are not detected at the MDL for its respective test method or the result is below the lowest applicable water quality objective during the first year of LTA monitoring, non-stormwater outfall monitoring will not be conducted (i.e., the monitoring frequency will become 0). For pollutants identified in Table E-2 of the MRP that are detected above the lowest applicable water quality objective during the first year of LTA monitoring, Non-stormwater outfall monitoring will become 2.

3 PAHs include: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

The MRP specifies the monitoring frequency for non-stormwater outfall monitoring as the following:

- For outfalls subject to a dry weather TMDL, the monitoring frequency shall be per the approved TMDL monitoring plan or as otherwise specified in the TMDL or as specified in an approved CIMP.
- For outfalls not subject to dry weather TMDLs, approximately quarterly for first year.
- Monitoring can be eliminated or reduced to twice per year, beginning in the second year of monitoring if pollutant concentrations measured during the first year do not exceed WQBELs, NALs or water quality standards for pollutants identified on the 303(d) List.

The non-stormwater outfall monitoring events will be coordinated with the dry weather receiving water monitoring events to allow for an evaluation of whether the non-stormwater discharges are causing or contributing to an observed exceedance of water quality objectives in the receiving water. While a monitoring frequency of four times per year is specified in the Permit, it is inconsistent with the dry weather receiving water monitoring requirements. The receiving water monitoring requires two dry weather monitoring events per year. Therefore, non-stormwater outfall monitoring events will be conducted twice per year.

A summary of how the non-stormwater outfall monitoring program meets the intended objectives of the non-stormwater outfall monitoring program outlined in Part II.E.3 of the MRP is presented in **Table 5-5**.

5.6.3 Adaptive Monitoring

Monitoring for non-stormwater discharges will be more dynamic than either the receiving water or stormwater outfall monitoring. As non-stormwater discharges are addressed, monitoring at the outfall will cease. Additionally, if monitoring demonstrates that discharges do not exceed any WQBELs, non-NALs, or water quality standards for pollutants identified on the 303(d) list, monitoring will cease at an outfall after the first year. The process of updating the CIMP per the monitoring results is presented in **Section 10**. Thus, the number and location of outfalls monitored has the potential to change on an annual basis.

TablJe 5-5.
Summary of Non-Stormwater Outfall Monitoring Program Objectives

MRP Objective	CIMP Component Meeting Objective
Determine whether a Permittee's discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs	○ List of constituents based on the water quality priorities which incorporate constituents with WQBELs derived from TMDL WLAs and considers current and historical exceedances in receiving waters.
Determine whether a Permittee's discharge exceeds non-stormwater action levels, as described in Attachment G of the MS4 Permit.	○ Extensive list of constituents being collectively monitored at non-stormwater outfall monitoring sites.
Determine whether a Permittee's discharge causes or contributes to an exceedance of RWLs.	○ List of constituents based on the monitoring requirements of the water body to which they discharge, as well as downstream water bodies.
Assist a Permittee in identifying illicit discharges as described in Part VI.D.10 of the MS4 Permit.	○ Non-stormwater outfall program is designed to be complimentary to IC/ID program. ○ Non-stormwater outfall program provides a mechanism for the detection, identification, and elimination of illicit discharges. ○ Where non-stormwater discharges are deemed "significant", the non-stormwater outfall program will discern whether the discharges are illicit, exempt, or conditionally exempt. ○ If the source identification component of the non-stormwater outfall program determines a discharge to be an illicit discharge, the discharge will be referred to the IC/ID program.

6 New Development/Re-Development Effectiveness Tracking

6.1 PROGRAM OBJECTIVES

Group Members have developed mechanisms for tracking information related to new and redevelopment projects that are subject to post-construction BMP requirements in Part VI.D.7 of the Permit. The specific data to be tracked listed in Part X.A of the MRP are listed in **Table 6-1**. The data will be used to assess the effectiveness of the low-impact development (LID) requirements for land development and to fulfill reporting requirements. Although the data requirements are clear, the procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction.

Table 6-1.
Required Data to Track for New and Redevelopment Projects per Attachment E.X.A

New Development and Redevelopment Data per Attachment E.X.A	
✓ Name of the Project	✓ Project design storm volume (gallons or million gallons per day (MGD))
✓ Name of the Developer	✓ Percent of design storm volume to be retained onsite
✓ Project location and map[(1)]	✓ Design volume for water quality mitigation treatment BMPs (if any)
✓ Documentation of issuance of requirements to the developer	✓ One year, one hour storm intensity[(2)] (if flow through treatment BMPs are approved)
✓ 85th percentile storm event for the project design (inches per 24 hours)	✓ Percent of design storm volume to be infiltrated at an offsite mitigation or groundwater replenishment site
✓ 95th percentile storm event for projects draining to natural water bodies (inches per 24 hours)	✓ Percent of design storm volume to be retained or treated with biofiltration at an offsite retrofit project
✓ Other design criteria required to meet hydromodification requirements for drainages to natural water bodies	✓ Location and maps of offsite mitigation, groundwater replenishment, or retrofit sites[1]
✓ Project design storm (inches per 24 hours)	✓ Date of Certificate of Occupancy

1 Preferably linked to the GIS Storm Drain Map
2 As depicted on the most recently issued isohyetal map published by the Los Angeles County hydrologist

6.2 EXISTING NEW DEVELOPMENT/RE-DEVELOPMENT TRACKING PROCEDURES

The Standard Urban Stormwater Mitigation Program (SUSMP) requirements implemented under the previous MS4 Permit (Order R4-01-182) laid the foundation for the MCMs contained in Part VI.D.7 of the current Permit. With implementation of the SUSMP, Permittees required post construction BMPs on applicable projects, developed standard requirements for project submittals, and began to track related data. The Group Members will build on the existing procedures for land development to ensure that all required project data is captured.

Internal procedures and data protocols that clearly define departmental roles and responsibilities pertaining to data collection, data management, and tracking will be utilized. These procedures will include points in the process where data are generated and tracked, who is responsible for tracking the data, and how the data will be managed. Data management protocols and internal procedures, will also consider the land development data tracking requirements contained in Part VI.D.7.d.iv.(1)(a). These requirements are distinct from those listed in the MRP but will be addressed similarly. Data requirements under Part VI.D are contained in **Table 6-2**.

Table 6-2.
Required Data to Track for New and Redevelopment Projects per Part VI.D.7.d.iv.(1)(a)

✓ Municipal Project ID	✓ Maintenance Records
✓ State Waste Discharge Identification Number	✓ Inspection Date(s)
✓ Project Acreage	✓ Inspection Summary(ies)
✓ BMP Type and Description	✓ Corrective Action(s)
✓ BMP Location (coordinates)	✓ Date Certificate of Occupancy Issued
✓ Date of Acceptance	✓ Replacement or Repair Date
✓ Date of Maintenance Agreement	

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7 Regional Studies

One regional study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC). The SMC is a collaborative effort between all of the Phase I MS4 NPDES Permittees and NPDES regulatory agencies in Southern California. The Southern California Coastal Water Research Project (SCCWRP) oversees the SMC.

On behalf of Group Members, the LACFCD will continue to provide full financial and/or monitoring resources to the SMC regional watershed monitoring program, also known as the Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program (Bioassessment Program). The Bioassessment Program was initiated in 2009 and is structured to occur in cycles of five years. Sampling under the first cycle concluded in 2013. The next five-year cycle is scheduled to begin in 2015, with additional special study monitoring scheduled to occur in 2014.

8 Non-Direct Measurements

Water quality data collected through other monitoring programs (e.g., WRPs receiving water monitoring) in the watershed will be evaluated to the extent practicable. The extent practicable will be dictated by the cost of gathering and compiling information from outside programs. It is not the intent or purpose of the CIMP to compile and analyze all available data. Data reported by these entities will be evaluated for suitability for inclusion in the CIMP database. If the data are deemed to be suitable they will be included in the ESGV CIMP database. Data from other programs will be used to supplement land use data to evaluate loading to the receiving water as well as to evaluate receiving water quality. Environmental data reported by other entities will be evaluated for suitability for inclusion in this CIMP database and will be accepted if it meets the following requirements:

- Conducted and documented consistent with the sampling procedures outlined in this CIMP.
- Sampling collection is performed and documented by a competent party consistent with applicable guidance and this CIMP.
- Sample analysis is conducted using approved analytical method by a certified analytical laboratory.

Receiving water monitoring sites were selected to allow coordination between this CIMP and LACSD receiving water monitoring programs. Currently, the San Gabriel River estuary site, R-8, will be used for dry weather Harbors Toxics TMDL monitoring requirements. If additional sites are moved to be coincident with the Water Reclamation Plant program, environmental data collected by the Water Reclamation Plants may be directly used in place of the monitoring described in this CIMP.

Due to the absence of previously collected monitoring results, an understanding has not been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 may be causing or contributing to the impairments identified in the Harbor Toxics TMDL. As such, to gain a clear understanding, environmental data representative of the entire San Gabriel River WMA will be collected downstream of the ESGV WMP area and directly used for suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. The downstream Lower San Gabriel River (LSGR) EWMP Group conducting monitoring in San Gabriel Reach 1 will conduct wet weather suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL. After a better understanding has been obtained of the extent to which pollutants associated with suspended sediment being discharged from the MS4 are causing or contributing to the impairments identified in the Harbor Toxics TMDL, the Group Members may elect to also conduct suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL at the receiving water LTA sites.

Non-direct measurements of flow and rainfall information will be obtained from the LACFCD as described in **Attachment D**.

9 Monitoring Procedures

A general outline of the monitoring procedures is presented in this section. Detailed discussion of the procedures is included in **Attachment D**.

9.1 MONITORING PROCEDURES

Monitoring will occur during dry and wet conditions. Wet weather conditions for triggering storm events will be defined as a 70 percent probable forecast of greater than 0.25 inches of precipitation of rain where the preceding 72 hours of dry weather has less than 0.1 inches of rain. The Metals TMDL operationally defines wet-weather where flow at the USGS gage station 11085000 is equal or greater than 260 cfs. Compliance with wet-weather metals allocations will be determined from loading estimates where flows at USGS gage 1108500 are measured greater than 260 cfs. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow. As noted in the Metals TMDL, the 90th percentile flow measured at S14 is 1 cfs, dry weather conditions are operationally defined as where flow measured at the S14 station is less than 1 cfs. In the case of an estuary, dry weather is defined as days with less than 0.1 inches of rain and days more than three days after a rain event of 0.1 inches or greater within the watershed, as measured from at least 50 percent of LACDPW controlled rain gauges within the watershed.

Note that if rainfall begins after dry weather monitoring has been initiated then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events as the composition of the receiving water will change less over time; and thus, the grab samples sufficiently characterize the receiving water. Additionally, grab samples for dry weather are consistent with similar programs throughout the region.

Composite samples will be used for wet weather sampling events to sufficiently characterize the receiving water during wet weather. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli; oil and grease), conditions are considered unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (auto-sampler) may not be warranted. Additionally, if auto-samplers fail during a rain event, or if the rain event is such that composite samples cannot be collected (e.g., very short in duration or volume), grab samples will be collected and submitted for analysis for all analytes. For dry weather toxicity monitoring, the sampling event must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry

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weather monitoring event will take place during January unless sampling during another month is deemed to be necessary or preferable.

All reasonable efforts will be made to monitor the first significant rain event of the storm year (first flush). The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Jose Creek and San Dimas Wash over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect some or all samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

Additional information to support evaluating weather conditions, collecting grab and composite samples, and targeting wet weather sampling events is provided in **Attachment D**.

9.2 ADAPTIVE MONITORING TRIGGER

Monitoring of a specific constituent will be eliminated if:

- For a water body pollutant combination (WBPC) covered in a TMDL, no exceedances are observed over a five-year period.
- For a WBPC on the 303(d) list, data collected are sufficient to support delisting per State policy.
- WBPC being monitored due to downstream 303(d) listings, two years of monitoring of no exceedances are observed for the same condition as the listing (i.e., wet or dry weather).
- Category 3C WBPCs having no exceedances over two years.

Category 3A WBPCs will be moved to Category 3C if there are two years of no observed exceedances. Additionally, monitoring for a constituent at the TMDL receiving water sites may be triggered in the future if two consecutive exceedances during the same condition (i.e., wet or dry weather) are observed at the LTA site. If a TMDL receiving water site has observed two consecutive exceedances during the same condition, the constituent will be added to the nearest upstream stormwater outfall or significant non-stormwater outfall site for wet or dry weather, respectively. Monitoring would be initiated at upstream receiving water monitoring sites during subsequent events until the elimination of the WBPC described above are triggered.

The monitoring data will be reviewed annually to determine if constituent lists for monitoring sites require updating. When additions or removals are triggered, the changes will become effective for the subsequent monitoring season and reported in the annual report.

9.3 AQUATIC TOXICITY TESTING

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. The following outlines the approach for conducting aquatic toxicity monitoring and evaluating results. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP. As *C. dubia* is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, *C. dubia* is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool.

Per the MRP, acute and chronic toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010).

For acute and chronic *C. dubia* toxicity testing, if a statistically significant 50% difference in mortality is observed between the sample and laboratory control, a TIE will be performed. If a statistically significant 50% difference in a sub-lethal endpoint is observed between the sample and laboratory control, a confirmatory sample will be collected from the receiving water within two weeks of obtaining the results of the initial sample. If a statistically significant 50% difference in mortality or sub-lethal endpoint is observed between the sample and laboratory control on the confirmatory sample, a TIE will be performed.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE positive control "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity.

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s). The Group Members will prepare a discharge assessment plan if TIEs conducted on consecutive sampling events are inconclusive. Discharge assessments will be conducted after consecutive inconclusive TIEs, rather than after one, because of the inherit variability associated with the toxicity and TIE testing methods.

Monitoring for constituents identified based on the results of a TIE will occur as soon as feasible following the completion of a successful TIE (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a successful TIE).

The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

9.4 SUSPENDED SEDIMENT SAMPLING

Most of the organochlorine (OC) pesticides and PCBs tend to strongly associate with sediment and organic material. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors. Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in the County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events.

Where analyses for storm borne sediment are required, the HRMS method will be used to quantify the constituents. Details of the method are presented in **Attachment D**.

10 Adaptive Management

The adaptive management process will be utilized on an annual basis to evaluate this CIMP and update the monitoring requirements as necessary. As noted in this CIMP, several monitoring elements are dynamic that will require modifications to the monitoring sites, schedule, frequency or parameters. In particular, the non-stormwater screening program and the toxicity monitoring will likely generate changes that need to be incorporated. This section lays out a range of possible modifications to this CIMP and the process for CIMP revision and update.

10.1 INTEGRATED MONITORING AND ASSESSMENT PROGRAM

Monitoring is based on water quality issues identified in downstream water bodies. As data are collected and currently identified constituents prove to not be an issue in the ESGV WMP area water bodies, they will be removed from the monitoring program. Likewise, if new constituents are identified, they will be added to the ongoing monitoring program. Every year, an evaluation will be conducted to identify potential modifications resulting from the following:

- TIEs result in the identification of additional constituents that need to be monitored.
- Inconclusive TIEs result in additional receiving water toxicity monitoring.
- Additional upstream receiving water monitoring is necessary to characterize the spatial extent of RWL exceedances.
- Additional outfall monitoring is needed in response to RWL exceedances.
- Non-stormwater outfall sites will change as discharges are addressed.
- Monitoring data demonstrates that water quality objectives are not being exceeded in the receiving waters.
- Source investigations determine that MS4 discharges are not a source of a constituent.

The results from the monitoring are meant to tie into the WMP as feedback for the water quality changes resulting from control measures implemented by the Group Members. As a result, additional changes may be considered during the evaluation based on the control measure implementation needs.

10.2 CIMP REVISION PROCESS

A range of sampling specified in the CIMP may result in data that will require changes to ensure monitoring meets the requirements and intent of the MRP and supports WMP implementation. However, since many of those potential changes are identified in this CIMP, it should not be necessary to obtain Regional Board approval of modifications already considered in this CIMP to ensure timely implementation of appropriate modifications to monitoring. Changes identified in this section will be discussed in the annual report and implemented starting no later than the first CIMP monitoring event of the next monitoring year (i.e., October 1 of the year following the annual report submittal), consisting of:

1. Adding constituents at receiving water and/or outfall monitoring sites, increasing monitoring frequency, or adding sites as a result of requirements in the MRP (e.g., TIE results), procedures outlined in this CIMP or to further support meeting the monitoring objectives.
2. Discontinuing monitoring for Table E-2 constituents that are not identified as a water quality priority, i.e. not previously monitored, and are not detected at levels above relevant water quality objectives in the first year of monitoring.
3. Discontinuing monitoring of any Category 3 constituent at a specified site if there are two consecutive years of monitoring for the same condition (i.e., wet or dry weather) with no exceedances observed.
4. Modifying methods for consistency with USEPA method requirements or to achieve lower detection limits.
5. Changing analytical laboratories.
6. Relocating an outfall monitoring location determined to be not representative of MS4 discharges in the WMP area, for reasons other than the observed water quality, or because monitoring at the site is not feasible.
7. Implementing the changes associated with conducting at least one re-assessment of the Non-stormwater Outfall Program during the Permit term.
8. Modifications to sampling protocols resulting from coordination with other watershed monitoring programs. In particular, suspended sediment monitoring associated with meeting the requirements of the Harbor Toxics TMDL will be conducted downstream of the WMP area. If consistent exceedances of interim WQBELs are observed and the MWP group determines that control measures will need to be implemented to meet the final WQBELs by March 23, 2032, the group will commence monitoring at the LTA site to assess the degree to which discharges from the WMP area are causing or contributing to those exceedances. After March 23, 2032, if there are two consecutive monitoring events with exceedances observed, the WMP Group will commence monitoring at the stormwater outfall monitoring sites to assess the degree to which discharges from each of the Group Members may be causing or contributing to those exceedances.

Should additional modifications be identified that are not specified in this section that would be major changes to the approach (e.g., moving or removing a stormwater outfall or receiving water location), the modifications will be proposed in the annual report and in a separate letter to the Regional Board Executive Officer for approval.

11 Reporting and Data Management

The following sections provide an overview of the monitoring and reporting the Group Members will follow. Details of the data management and reporting are included in **Attachment D**.

11.1 DOCUMENTS AND RECORDS

The ESGV Group shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the Permit, and records of all data used to completed the Report of Waste Discharge and application of the Permit, for a period of at least three years from the date of the sample, measurement, report, or application.

11.1.1 Event Summary Reports

Reports of monitoring activities will include, at a minimum, the following information:

- The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
- The individual(s) who performed the sampling or measurements.
- The date(s) analyses were performed.
- The individual(s) who performed the analyses.
- The analytical techniques or methods used.
- The results of such analyses.
- The data sheets showing toxicity test results.

11.1.2 Semi-Annual Analytical Data Reports

Results from each of the receiving water or outfall based monitoring station conducted in accordance with standard operating procedures shall be sent electronically to the Regional Board's stormwater site at MS4stormwaterRB4@waterboards.ca.gov. Analytical data reports are required to be submitted on a semi-annual basis and will include the following:

- Exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds.
- Corresponding sample dates and monitoring locations.

Semi-annual data reports will be submitted June 15 and December 15 of each year. The mid-year data reports will cover the monitoring period of July 1 through December 31. The December data report will cover January 1 through June 30.

11.2 MONITORING REPORTS

Annual monitoring reports will be submitted by December 15 of each year. The annual monitoring reports will cover the monitoring period of July 1 through June 30. The annual monitoring reports will include the following:

- Watershed summary information
- Watershed management area
- Subwatershed (HUC-12) descriptions
- Description of permittee(s) drainage area within the subwatershed
- Annual assessment and reporting
- Stormwater control measures
- Effectiveness assessment of stormwater control measures
- Non-stormwater water control measures
- Effectiveness assessment of non-stormwater control measures
- Integrated monitoring compliance report
- Adaptive management strategies
- Supporting data and information

Details on the reporting requirements from the MRP that will be submitted with the semi-annual analytical data reports and annual monitoring reports are presented in **Attachment D**. In addition to the requirements from the MRP, a discussion of how the reported data are to be used is included in **Attachment D**.

11.3 DATA MANAGEMENT

The acceptability of data is determined through data verification and data validation. In addition to the programmatic data quality objectives, the standard data validation procedures documented in the subcontracted laboratory's quality assurance (QA) manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory's QA officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Decisions to reject or qualify data will be made, based on the evaluation of field and laboratory quality control data. Data verification is the process of checking required methods and procedures have been followed at all stages of the data collection process, including: collection, receipt, preparation, and analysis of samples; and review of generated results for completeness. Data validation is the process to determine if project requirements are met, including: obtaining the documents and records produced during data verification and evaluating the quality of the data generated by the laboratory equipment to evaluate the acceptability of the analytical results as representative measures of the conditions in the original sample.

The field log and analytical data generated will be converted to a standard database format. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the database. Details of the data management protocols are provided in **Attachment D**.

12 Schedule for CIMP Implementation

The CIMP will become effective July 1, 2015, or 90 days after approval by the Executive Officer of the Regional Board whichever is later. However, new and redevelopment effectiveness tracking will begin no later than the date of Draft WMP submittal (June 28, 2014).

During the CIMP approval process all existing monitoring will continue. Within 90 days of CIMP approval, sample collection for all constituents at all dry and existing wet weather receiving water sites will commence. The remaining monitoring will be affected by the feasibility of collecting a sample within 90 days of CIMP approval. The two primary factors affecting the feasibility of sample collection upon approval of this CIMP relate to (1) auto-sampler installation and (2) monitoring that is dependent upon prerequisite information (e.g., monitoring of significant non-stormwater discharges).

The process for installing auto-samplers includes numerous tasks that require multiple agency coordination and permitting. Numerous auto-sampler stations have been installed throughout the County and provide significant experience in understanding the challenges and timelines for designing, permitting, and installing auto-sampler stations. The following provides an overview of the tasks and timelines associated with auto-sampler installation and what would be considered a relatively straightforward installation timeframe:

- Detailed auto-sampler site configuration/design, which includes data collection and review, identification of permit requirements, concept design, development of summary technical memos, and review by participating agencies and associated divisions: 12 months.
- Obtaining permits from one or more of the following entities: Army Corps of Engineers, LACFCD, United States Fish and Wildlife Service, California Department of Fish and Game, California Coastal Commission, and the Regional Board: 3 to 10 months.
- Purchase of equipment via contractor or via agency procurement process (can occur somewhat concurrently with permitting): 2 to 6 months.
- Connecting to power via an upgrade to existing service or establishing new service: 1 to 6 months.
- Construction of monitoring station assuming no bid/award process: 1 month.
- Total time: 18 to 30 months.

Phasing in the receiving water and stormwater outfall elements of this CIMP will allow evaluation of the sites to determine if any need to be changed due to significant contributions from non-MS4 sources or other reasons that sampling is not feasible at a site requiring an alternate or a new site.

Phase I of the CIMP Implementation:

- Fiscal Year 2014-2015.
- Non-stormwater screening.
- Dry weather monitoring at all locations (beginning July 1, 2015 or 90 days after CIMP approval; whichever is later.)

Phase II of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2015-2016.
- Determination of significant non-stormwater outfalls.
- Installation of LTA receiving water site.
- Installation of 2 TMDL receiving water sites.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase III of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2016-2017.
- Installation of 3 stormwater outfall sites.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing and new sites.

Phase IV of the CIMP Implementation (assuming CIMP approved by July 1, 2015):

- Fiscal Year 2017-2018.
- Dry weather monitoring at all locations.
- Stormwater monitoring at existing sites.
- Installation of optional TMDL receiving water site as necessary.

13 References

Regional Board, 2013. Final Staff Report for the Implementation Plans and Schedules for the Los Cerritos Channel and San Gabriel River Metals TMDLs.

Regional Board, 2011. Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters. Attachment A to Resolution No. R11-008. Adopted May 5, 2011. Effective March 23, 2012.

Regional Board, 2012. Water Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4s) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4. Order No. R4-2012-0175. NPDES No. CAS004001. December 6

USEPA, 2007. Total Maximum Daily Loads for Metals and Selenium – San Gabriel River and Impaired Tributaries. USEPA Region 9. March 26, 2007.

USEPA, 2012. Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs. USEPA Region 9. March 26, 2012.

Attachment A

Middle Santa Ana River Water Quality Monitoring Plan

City of Claremont:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Claremont.pdf

City of Pomona:

http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/msar/cbrp/scb/CBRP_City_of_Pomona.pdf

Attachment B

Monitoring Location Fact Sheets

B-1 RECEIVING WATER SITES

B-1.1 Live Oak Wash Long Term Assessment Site

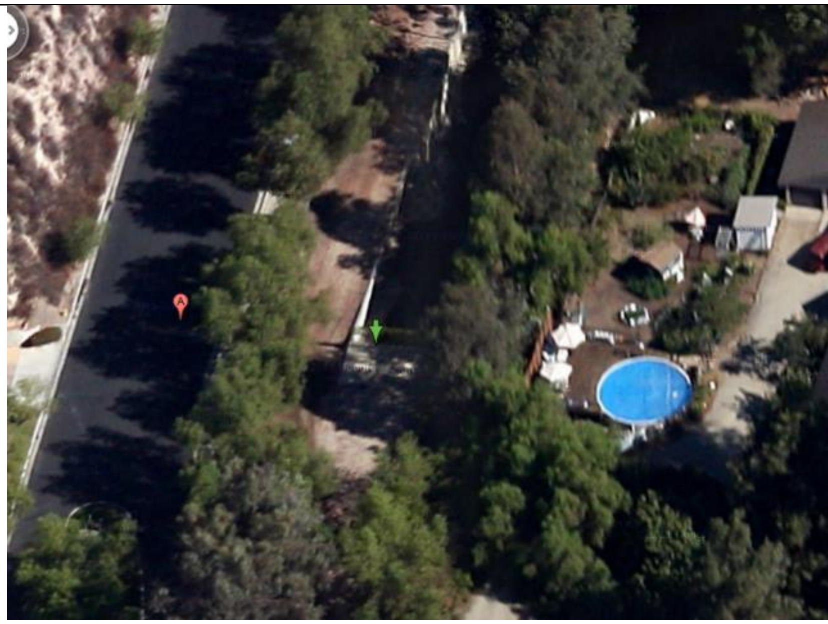
Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
Live Oak Wash	Tributary	ESGV_LOW_DS	N/A	LTA, TMDL	34.094064	-117.792934

General Description: LTA monitoring site located upstream of where Live Oak Wash discharges into Puddingstone Reservoir and downstream of the confluence of all major tributaries with Live Oak Wash. Because Live Oak Wash is a soft-bottomed channel and irregularly shaped at the location of the LTA monitoring site, flow will be measured upstream of the LTA monitoring site within Puddingstone Channel, Marshal Creek, and at Live Oak Wash upstream of the confluence of these tributaries.

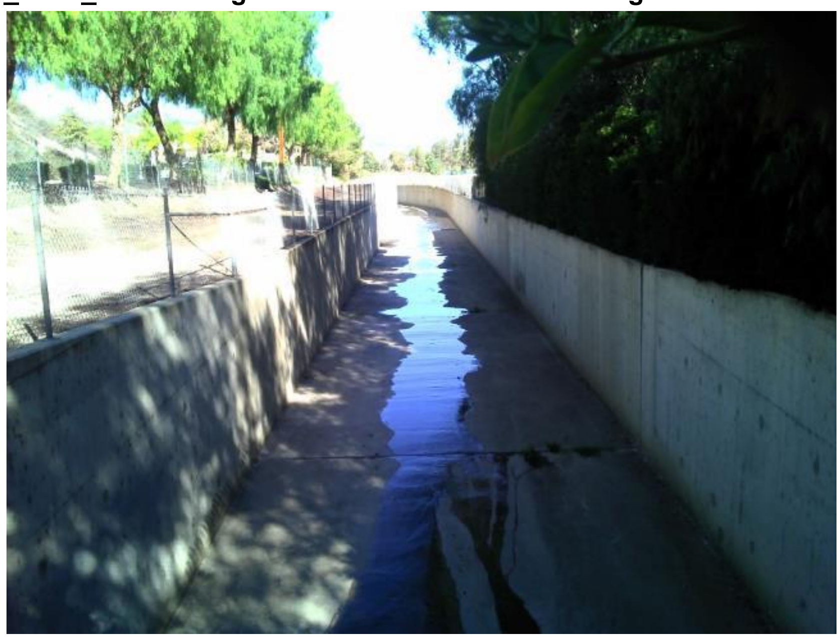
ESGV_LOW_DS Aerial View


ESGV_LOW_DS Looking Upstream


ESGV_LOW_DS Looking Downstream

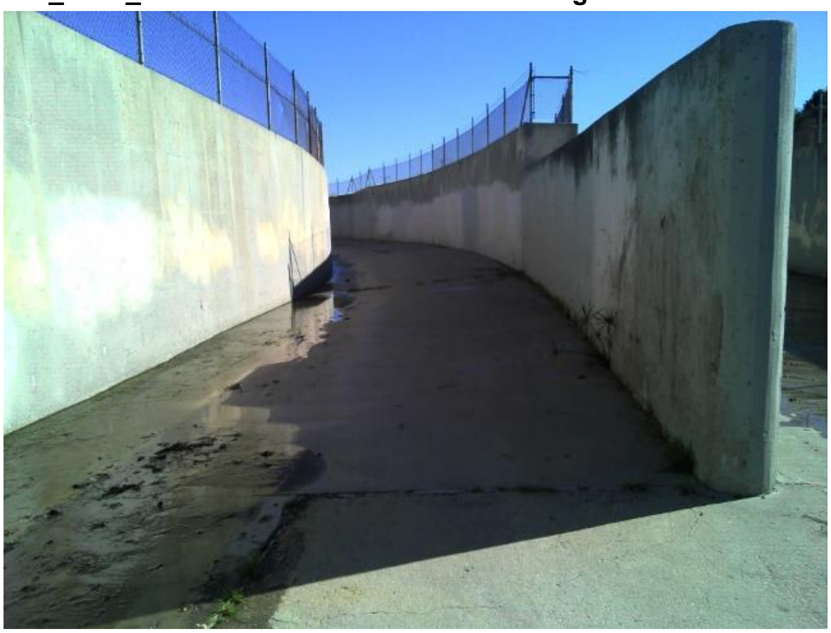


ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Aerial View



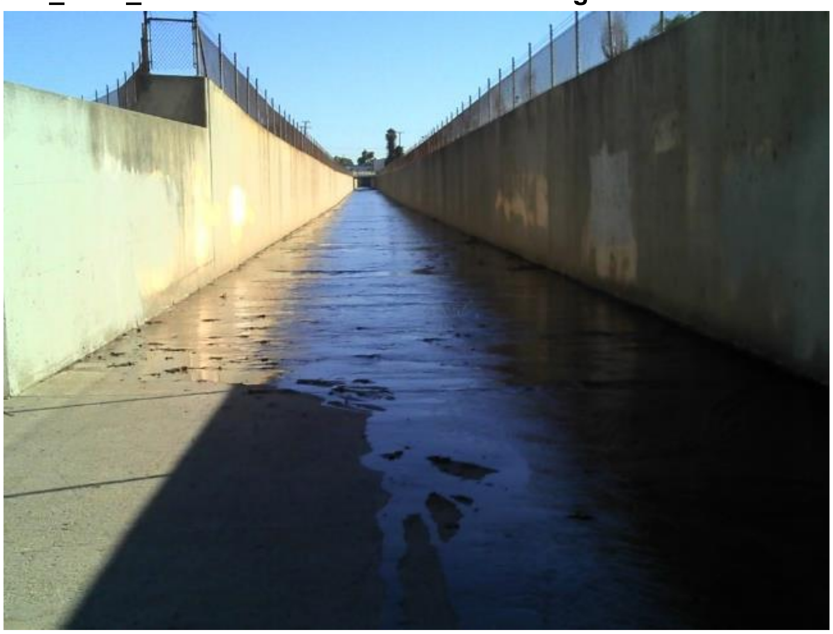
ESGV_LOW_DS Puddingstone Channel Flow Monitoring Location Looking Upstream

ESGV_LOW_DS Marshall Creek Flow Monitoring Location Aerial View



ESGV_LOW_DS Marshall Creek Flow Monitoring Location Looking Upstream

ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Aerial View

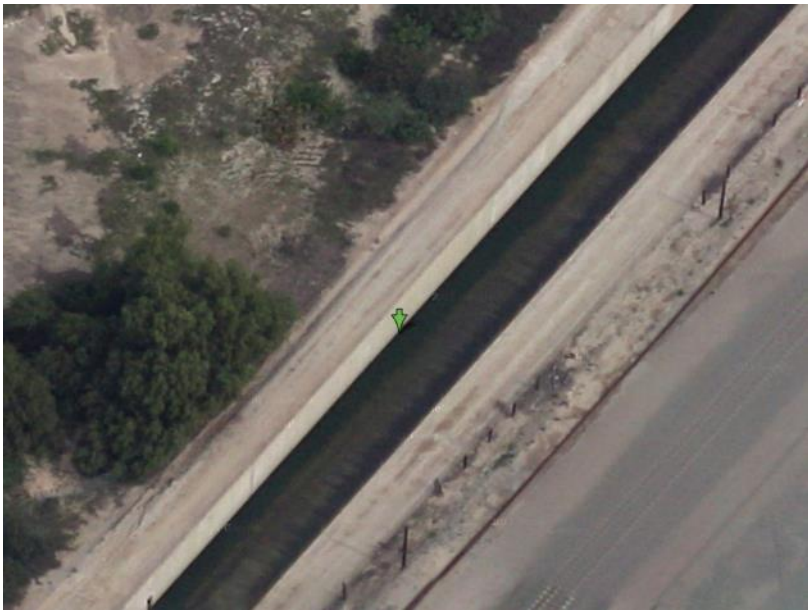


ESGV_LOW_DS Live Oak Wash Flow Monitoring Location Looking Upstream

B-1.2 San Jose Creek TMDL site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Jose Creek	Tributary	ESGV_SJC_DS	N/A	TMDL	34.032233	-117.824894

General Description: TMDL monitoring site located at the downstream intersection of San Jose Creek and the ESGV Group's jurisdictional boundary.



ESGV_SJC_DS Aerial View

ESGV_SJC_DS Looking Upstream

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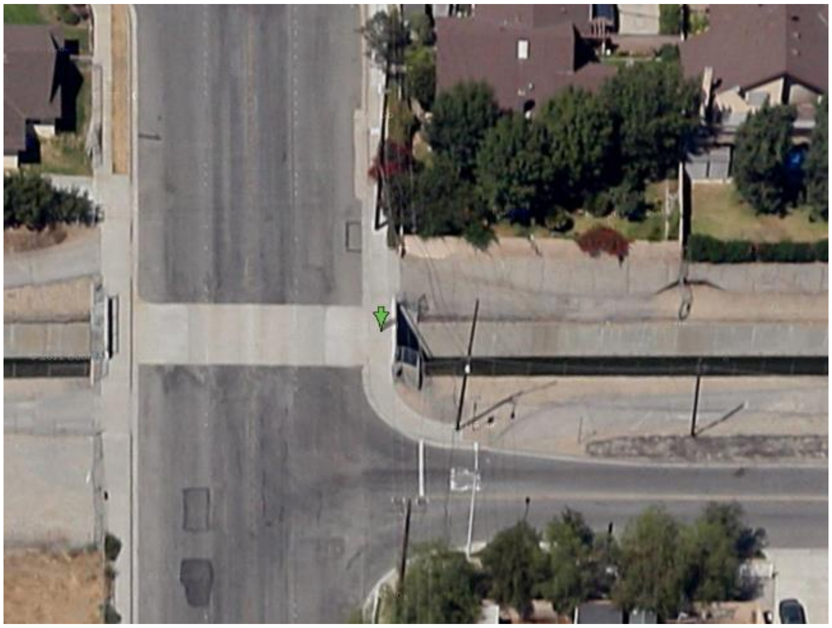
B-1.3 San Dimas Wash Special Study Assessment site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_SDW_DS	N/A	TMDL	34.121341	-117.820088
General Description: TMDL monitoring site located at the downstream intersection of San Dimas Wash and the ESGV Group's jurisdictional boundary.						



ESGV_SDW_DS Aerial View

ESGV_SDW_DS Looking Downstream

B-1.4 Walnut Creek Wash Optional TMDL Site

Waterbody Name	Waterbody Type	Site ID	Historical Site ID	Site Type	Latitude	Longitude
San Dimas Wash	Tributary	ESGR_WCW_DS	N/A	TMDL	34.086672	-117.845592
General Description: TMDL monitoring site located at the downstream of Puddingstone Dam and upstream of the ESGV Group's jurisdictional boundary.						

ESGV_SDW_DS Looking Downstream

B-2 Stormwater Outfall Sites

B-2.1 MTD 766

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Big Dalton Wash	San Dimas	MTD 766	42 inches	SW Outfall	34.12417	-117.80215

General Description: New SW outfall monitoring site discharging to San Dimas Wash just upstream of Foothill Blvd. Receives drainage from San Dimas and La Verne. Primary land use types include: 89% residential; 10% commercial/industrial; and 1% agricultural.

MTD 766 Aerial View

MTD 766

B-2.2 BI 0566 Line A

HUC-12 Equivalent	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper San Jose Creek	Pomona	BI 0566 Line A	84 inches	SW Outfall	34.09926	-117.75468

General Description: New SW outfall monitoring site discharging to Thompson Wash upstream of Bonita Ave. Receives drainage from Pomona and Claremont. Primary land use types include: 83% residential; 15% commercial/industrial; and 2% open space.

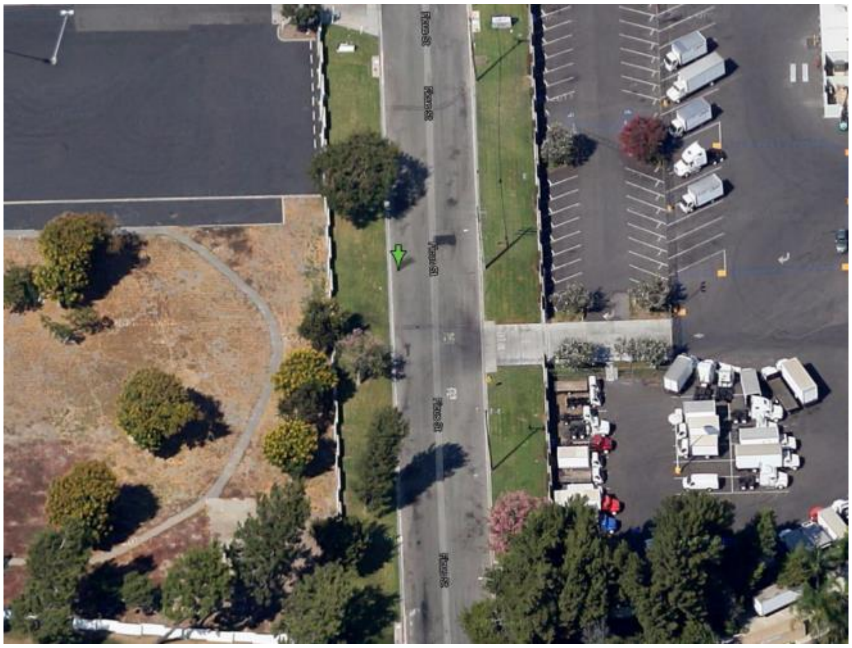
BI 0566 Line A Aerial View

BI 0566 Line A

B-2.3 San Antonio Drain Unit 1

HUC-12	City	Drain Name	Size	Site Type	Latitude	Longitude
Upper Chino Creek	Pomona	San Antonio Drain Unit 1	120 inches	SW Outfall	34.01976	-117.73575

General Description: New SW outfall monitoring site discharging to Chino Creek. Located on Ficus St north of Riverside Dr at nearest manhole upstream of outfall. Receives drainage from Pomona. Primary land use types include: 67% residential; 31% commercial/industrial; and 2% open space.



San Antonio Drain Unit 1 Aerial View

San Antonio Drain Unit 1 Looking South Towards Outfall

Attachment C

Table E-2 of the Monitoring and Reporting Program

Table E-2 of the Monitoring and Reporting Program

CONSTITUENTS
CONVENTIONAL POLLUTANTS
Oil and Grease
Total Phenols
Cyanide
pH
Temperature
Dissolved Oxygen
BACTERIA
Fecal Coliform
E. coli
GENERAL
Dissolved Phosphorus
Total Phosphorus
Turbidity
Total Suspended Solids
Total Dissolved Solids
Volatile Suspended Solids
Total Organic Carbon
Total Petroleum Hydrocarbon
Biochemical Oxygen Demand
Chemical Oxygen Demand
Total Ammonia-Nitrogen
Total Kjeldahl Nitrogen
Nitrate-Nitrogen
Alkalinity
Specific Conductance
Total Hardness
MBAS
Chloride
Fluoride
Methyl tertiary butyl ether (MTBE)

CONSTITUENTS
Perchlorate
METALS
Aluminum
Antimony
Arsenic
Beryllium
Cadmium
Chromium (total)
Chromium (Hexavalent)
Iron
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc
SEMIVOLATILE ORGANIC COMPOUNDS
Acids
2-Chlorophenol
4-Chloro-3-methylphenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol
Base/Neutral
Acenaphthene
Acenaphthylene

CONSTITUENTS
Anthracene
Benzidine
1,2 Benzanthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
3,4 Benzofluoranthene
Benzo(k)fluoranthene
Bis(2-Chloroethoxy) methane
Bis(2-Chloroisopropyl) ether
Bis(2-Chloroethyl) ether
Bis(2-Ethylhexl) phthalate
4-Bromophenyl phenyl ether
Butyl benzyl phthalate
2-Chloroethyl vinyl ether
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Chrysene
Dibenzo(a,h)anthracene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
3,3-Dichlorobenzidine
Diethyl phthalate
Dimethyl phthalate
di-n-Butyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
4,6 Dinitro-2-methylphenol
1,2-Diphenylhydrazine
di-n-Octyl phthalate
Fluoranthene
Fluorene
Hexachlorobenzene

CONSTITUENTS
Hexachlorobutadiene
Hexachloro-cyclopentadiene
Hexachloroethane
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-dimethyl amine
N-Nitroso-diphenyl amine
N-Nitroso-di-n-propyl amine
Phenanthrene
Pyrene
1,2,4-Trichlorobenzene
CHLORINATED PESTICIDES
Aldrin
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (lindane)

CONSTITUENTS
alpha-chlordane
gamma-chlordane
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dieldrin
alpha-Endosulfan
beta-Endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor Epoxide
Toxaphene
POLYCHLORINATED BIPHENYELS
Aroclor-1016
Aroclor-1221
Aroclor-1232

CONSTITUENTS
Aroclor-1242
Aroclor-1248
Aroclor-1254
Aroclor-1260
ORGANOPHOSPHATE PESTICIDES
Atrazine
Chlorpyrifos
Cyanazine
Diazinon
Malathion
Prometryn
Simazine
HERBICIDES
2,4-D
Glyphosate
2,4,5-TP-SILVEX

Attachment D

Analytical and Monitoring Procedures

Attachment D details the monitoring procedures that will be utilized to collect and analyze samples to meet the goals and objectives of the CIMP and the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful sample collection and analysis. The attachment is divided into the following sections:

1. Analytical Procedures
2. Sampling Methods and Sample Handling
3. Quality Assurance/Quality Control
4. Instrument/Equipment Calibration and Frequency
5. Monitoring Procedures References

D-1 Analytical Procedures

The following subsections detail the analytical procedures for data generated in the field and in the laboratory.

D-1.1 Field Parameters

Portable field meters will measure field parameters within specifications outlined in **Table D-1**.

Table D-1.
Analytical Methods and Project Reporting Limits for Field Parameters

Parameter	Method	Range	Project RL
Current velocity	Electromagnetic	-0.5 to +20 ft/s	0.05 ft/s
pH	Electrometric	0 – 14 pH units	NA
Temperature	High stability thermistor	-5 – 50 oC	NA
Dissolved oxygen	Membrane	0 – 50 mg/L	0.5 mg/L
Turbidity	Nephelometric	0 – 3000 NTU	0.2 NTU
Conductivity	Graphite electrodes	0 – 10 mmhos/cm	2.5 umhos/cm

RL – Reporting Limit NA – Not applicable

D-1.2 Analytical Methods and Method Detection and Reporting Limits

Method detection limits (MDL) and reporting limits (RLs) must be distinguished for proper understanding and data use. The MDL is the minimum analyte concentration that can be measured and reported with a 99% confidence that the concentration is greater than zero. The RL represents the concentration of an analyte that can be routinely measured in the sampled matrix within stated limits and with confidence in both identification and quantitation.

For this CIMP, RLs must be verifiable by having the lowest non-zero calibration standard or calibration check sample concentration at or less than the RL. RLs have been established in this CIMP based on the verifiable levels and general measurement capabilities demonstrated for each

method. These RLs should be considered as maximum allowable RLs to be used for laboratory data reporting. Note that samples diluted for analysis may have sample-specific RLs that exceed these RLs. This will be unavoidable on occasion. However, if samples are consistently diluted to overcome matrix interferences, the analytical laboratory will be required to notify the ESGV Group regarding how the sample preparation or test procedure in question will be modified to reduce matrix interferences so that project RLs can be met consistently.

Analytical methods and RLs required for samples analyzed in the laboratory are summarized in **Table D-2** and **Table D-3** for analysis in water, sediment, and tissue, respectively. For organic constituents, environmentally relevant detection limits will be used to the extent practicable. The RLs listed in **Table D-2** are consistent with the requirements of the available minimum levels provided in the MRP, except for total dissolved solids, which was set equal to the minimum level identified in the California State Water Resources Control Board's Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Project Plan. Alternative methods with RLs that are at or below those presented in **Table D-2** and **Table D-3** are considered equivalent and can be used in place of the methods presented in **Table D-2** and **Table D-3**.

Prior to the analysis of any environmental samples, the laboratory must have demonstrated the ability to meet the minimum performance requirements for each analytical method presented in **Table D-2** and **Table D-3**. The initial demonstration of capability includes the ability to meet the project RLs, the ability to generate acceptable precision and accuracy, and other analytical and quality control parameters documented in this CIMP. Data quality objectives for precision and accuracy are summarized in **Table D-4**.

Table D-2.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Water Samples

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Toxicity				
Pimephales promelas	EPA-821-R-02-013 (1000.0) and EPA-821-R-02-012 (2000.0)	NA	NA	NA
Ceriodaphnia dubia	EPA-821-R-02-013 (1002.0) and EPA-821-R-02-012 (2002.0)	NA	NA	NA
Selenastrum capricornutum	EPA-821-R-02-013 (1003.0)	NA	NA	NA
Bacteria				
Escherichia coli	SM 9221	MPN/100mL	10	235
Conventionals				

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Oil and Grease	EPA 1664A	mg/L	5	5
Cyanide	SM 4500-CN E	mg/L	0.005	0.005
pH	SM 4500 H+B/ EPA 9040/ EPA 9045D	NA	NA	0-14
Dissolved Oxygen	NA	mg/L	0.5	Sensitivity to 5 mg/L
Specific Conductance	EPA 120.1	µs/cm	1	1
Turbidity	EPA 180.1	NTU	0.1	0.1
Total Hardness	SM 2340C	mg/L	2	2
Dissolved Organic Carbon	SM 5310B	mg/L	0.6	NA
Total Organic Carbon	SM 5310B	mg/L	1	1
Total Petroleum Hydrocarbon	EPA 1664	mg/L	5	5
Biochemical Oxygen Demand	SMOL-5210	mg/L	5	2
Chemical Oxygen Demand	SM 5220D	mg/L	20	20-900
MBAS	SM 5540C	mg/L	0.5	0.5
Chloride	EPA 300.0	mg/L	1	2
Fluoride	EPA 300.0	mg/L	0.1	0.1
Sulfate	EPA 375.4	mg/L	1	NA
Perchlorate	EPA 314.0	µg/L	4	4
Chlorophyll a	SM 10200 H	mg/L	0.01	NA
Dissolved Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Total Phosphorus	SM 4500-P E	mg/L	0.05	0.05
Orthophosphate-P	EPA 300.0	mg/L	0.2	NA
Ammonia (as N)	SM 4500-NH3 C	mg/L	0.1	0.1
Nitrate + Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrate (as N)	EPA 300.0	mg/L	0.1	0.1
Nitrite (as N)	EPA 300.0	mg/L	0.1	0.1
Total Kjehdahl Nitrogen (TKN)	SM 4500-NH3 C	mg/L	0.1	0.1
Total Alkalinity	SM 2320B	mg/L	2	2
Solids				
Suspended Sediment Concentration (SSC)	ASTMD 3977-97	mg/L	3	NA
Total Suspended Solids (TSS)	SM 2540D	mg/L	2	2
Total Dissolved Solids (TDS)	SM 2540C	mg/L	10	2

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Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Volatile Suspended Solids	EPA 1684	mg/L	1	2
Metals in Freshwater (dissolved and total)				
Aluminum	EPA 200.8	µg/L	100	100
Antimony	EPA 200.8	µg/L	0.5	0.5
Arsenic	EPA 200.8	µg/L	1	1
Beryllium	EPA 200.8	µg/L	0.5	0.5
Cadmium	EPA 200.8	µg/L	0.25	0.25
Chromium (total)	EPA 200.8	µg/L	0.5	0.5
Chromium (Hexavalent)	EPA 200.8	µg/L	5	5
Copper	EPA 200.8	µg/L	0.5	0.5
Iron	EPA 200.8	µg/L	100	100
Lead	EPA 200.8	µg/L	0.5	0.5
Mercury	EPA 1631	µg/L	0.5	0.5
Nickel	EPA 200.8	µg/L	1	1
Selenium	EPA 200.8	µg/L	1	1
Silver	EPA 200.8	µg/L	0.25	0.25
Thallium	EPA 200.8	µg/L	1	1
Zinc	EPA 200.8	µg/L	1	1
Organochlorine Pesticides				
Aldrin	EPA 608	ng/L	5	5
alpha-BHC	EPA 608	ng/L	10	10
beta-BHC	EPA 608	ng/L	5	5
delta-BHC	EPA 608	ng/L	5	5
gamma-BHC (Lindane)	EPA 608	ng/L	20	20
Chlordane-alpha	EPA 608	ng/L	100	100
Chlordane-gamma	EPA 608	ng/L	100	100
Oxychlordane	EPA 608	ng/L	200	NA
Cis-nonachlor	EPA 608	ng/L	200	NA
Trans-nonachlor	EPA 608	ng/L	200	NA
2,4'-DDD	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDE	EPA 625/ 8270C	ng/L	2	NA
2,4'-DDT	EPA 625/ 8270C	ng/L	2	NA

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
4,4'-DDD	EPA 625/ 8270C	ng/L	50	50
4,4'-DDE	EPA 625/ 8270C	ng/L	50	50
4,4'-DDT	EPA 625/ 8270C	ng/L	10	10
Dieldrin	EPA 608	ng/L	10	10
Endosulfan I	EPA 608	ng/L	20	20
Endosulfan II	EPA 608	ng/L	10	10
Endosulfan Sulfate	EPA 608	ng/L	50	50
Endrin	EPA 608	ng/L	10	10
Endrin Aldehyde	EPA 608	ng/L	10	10
Heptachlor	EPA 608	ng/L	10	10
Heptachlor Epoxide	EPA 608	ng/L	10	10
Toxaphene	EPA 608	ng/L	500	500
PCBs				
Congeners[2]	EPA 625/ 8270C	ng/L	2	NA
Aroclors (1016, 1221, 1232, 1242, 1248, 1254, 1260)	EPA 608/ 625/ 8270C	ng/L	500	500
Organophosphorus Pesticides				
Chlorpyrifos	EPA 614	ng/L	50	50
Diazinon	EPA 614	ng/L	10	10
Malathion	EPA 614	ng/L	1000	1000
Triazine				
Atrazine	EPA 530	µg/L	2	2
Cyanazine	EPA 530	µg/L	2	2
Prometryn	EPA 530	µg/L	2	2
Simazine	EPA 530	µg/L	2	2
Dioxins				
2,3,7,8-TCDD	EPA 1613	ng/L	0.005	NA
1,2,3,7,8-PeCDD	EPA 1613	ng/L	0.025	NA
1,2,3,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
2,3,4,7,8-PeCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDD	EPA 1613	ng/L	0.025	NA

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
1,2,3,7,8,9-HxCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,7,8,9-HxCDF	EPA 1613	ng/L	0.025	NA
2,3,4,6,7,8-HxCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDD	EPA 1613	ng/L	0.025	NA
1,2,3,4,6,7,8-HpCDF	EPA 1613	ng/L	0.025	NA
1,2,3,4,7,8,9-HpCDF	EPA 1613	ng/L	0.025	NA
OCDD	EPA 1613	ng/L	0.025	NA
OCDF	EPA 1613	ng/L	0.050	NA
Herbicides				
2,4-D	EPA 8151A	µg/L	10	10
Glyphosate	EPA 547	µg/L	5	5
2,4,5-TP-SILVEX	EPA 8151A	µg/L	0.5	0.5
Semivolatile Organic Compounds (SVOCs)				
1,2-Diphenylhydrazine	EPA 625	µg/L	1	1
2,4,6-Trichlorophenol	EPA 625	µg/L	10	10
2,4-Dichlorophenol	EPA 625	µg/L	1	1
2,4-Dimethylphenol	EPA 625	µg/L	2	2
2,4-Dinitrophenol	EPA 625	µg/L	5	5
2,4-Dinitrotoluene	EPA 625	µg/L	5	5
2,6-Dinitrotoluene	EPA 625	µg/L	5	5
2-Chloronaphthalene	EPA 625	µg/L	10	10
2-Chlorophenol	EPA 625	µg/L	2	2
2-Methyl-4,6-dinitrophenol	EPA 625	µg/L	5	5
2-Nitrophenol	EPA 625	µg/L	10	10
3,3'-Dichlorobenzidine	EPA 625	µg/L	5	5
4-Bromophenyl phenyl ether	EPA 625	µg/L	5	5
4-Chloro-3-methylphenol	EPA 625	µg/L	1	1
4-Chlorophenyl phenyl ether	EPA 625	µg/L	5	5
4-Nitrophenol	EPA 625	µg/L	5	5
Acenaphthene	EPA 625	µg/L	1	1

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Acenaphthylene	EPA 625	µg/L	2	2
Anthracene	EPA 625	µg/L	2	2
Benzidine	EPA 625	µg/L	5	5
Benzo(a)anthracene	EPA 625	µg/L	5	5
Benzo(a)pyrene	EPA 625	µg/L	2	2
Benzo(b)fluoranthene	EPA 625	µg/L	10	10
Benzo(g,h,i)perylene	EPA 625	µg/L	5	5
Benzo(k)fluoranthene	EPA 625	µg/L	2	2
Benzyl butyl phthalate	EPA 625	µg/L	10	10
bis(2-Chloroethoxy) methane	EPA 625	µg/L	5	5
bis(2-Chloroisopropyl) ether	EPA 625	µg/L	2	2
bis(2-Chloroethyl) ether	EPA 625	µg/L	1	1
bis(2-Ethylhexyl) phthalate	EPA 625	µg/L	5	5
Chrysene	EPA 625	µg/L	5	5
Dibenzo(a,h)anthracene	EPA 625	µg/L	0.1	0.1
Diethyl phthalate	EPA 625	µg/L	2	2
Dimethyl phthalate	EPA 625	µg/L	2	2
Di-n-butylphthalate	EPA 625	µg/L	10	10
Di-n-octylphthalate	EPA 625	µg/L	10	10
Fluoranthene	EPA 625	µg/L	0.05	0.05
Fluorene	EPA 625	µg/L	0.1	0.1
Hexachlorobenzene	EPA 625	µg/L	1	1
Hexachlorobutadiene	EPA 625	µg/L	1	1
Hexachloro-cyclo pentadiene	EPA 625	µg/L	5	5
Hexachloroethane	EPA 625	µg/L	1	1
Indeno(1,2,3-cd)pyrene	EPA 625	µg/L	0.05	0.05
Isophorone	EPA 625	µg/L	1	1
Naphthalene	EPA 625	µg/L	0.2	0.2
Nitrobenzene	EPA 625	µg/L	1	1
N-Nitroso-dimethyl amine	EPA 625	µg/L	5	5
N-Nitrosodiphenylamine	EPA 625	µg/L	1	1
N-Nitroso-di-n-propyl amine	EPA 625	µg/L	5	5

Parameter/Constituent	Method[1]	Units	Project RL	MRP Table E-2 ML
Pentachlorophenol	EPA 625	µg/L	2	2
Phenanthrene	EPA 625	µg/L	0.05	0.05
Total Phenols	EPA 625	mg/L	0.2	0.1
Phenol	EPA 625	µg/L	1	1
Pyrene	EPA 625	µg/L	0.05	0.05
Volatile Organic Compounds				
1,2,4-Trichlorobenzene	EPA 625	µg/L	1	1
1,2-Dichlorobenzene	EPA 625	µg/L	1	1
1,3-Dichlorobenzene	EPA 625	µg/L	1	1
1,4-Dichlorobenzene	EPA 625	µg/L	1	1
2-Chloroethyl vinyl ether	EPA 625	µg/L	1	1
Methyl tert-butyl ether (MTBE)	EPA 625	µg/L	1	1

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCB congeners includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-3.
Analytical Methods and Reporting Limits (RLs) for Laboratory Analysis of Sediment

Parameter/Constituent	Method(1)	Units	Project RL
General Parameters			
% Solids	EPA 1684	%	NA
Total Organic Carbon (TOC)	SM5310B	% Dry Weight	0.05
Chlordane Compounds			
alpha-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
gamma-Chlordane	USEPA 8081A/8270C	ng/dry g	0.5
Oxychlordane	USEPA 8081A/8270C	ng/dry g	0.5
trans-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
cis-Nonachlor	USEPA 8081A/8270C	ng/dry g	0.5
Other OC Pesticides			
2,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
2,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDD	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDE	USEPA 8081A/8270C	ng/dry g	0.5
4,4'-DDT	USEPA 8081A/8270C	ng/dry g	0.5
Total DDT	USEPA 8081A/8270C	ng/dry g	NA
Dieldrin	USEPA 8081A/8270C	ng/dry g	0.02
PAHs			
1-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
1-Methylphenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
2-Methylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
2,6-Dimethylnaphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Acenaphthene	USEPA 8270C/8270D - SIM	ng/dry g	20
Anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(a)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Benzo(e)pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Biphenyl	USEPA 8270C/8270D - SIM	ng/dry g	20
Chrysene	USEPA 8270C/8270D - SIM	ng/dry g	20
Dibenz(a,h)anthracene	USEPA 8270C/8270D - SIM	ng/dry g	20
Fluoranthene	USEPA 8270C/8270D - SIM	ng/dry g	20

Parameter/Constituent	Method[1]	Units	Project RL
Fluorene	USEPA 8270C/8270D - SIM	ng/dry g	20
Naphthalene	USEPA 8270C/8270D - SIM	ng/dry g	20
Perylene	USEPA 8270C/8270D - SIM	ng/dry g	20
Phenanthrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Pyrene	USEPA 8270C/8270D - SIM	ng/dry g	20
Total PCBs[2]	USEPA 8270C/8270D-SIM	ng/dry g	0.2
Metals			
Cadmium	EPA 6020	µg/dry g	0.05
Copper	EPA 6020	µg/dry g	0.05
Lead	EPA 6020	µg/dry g	0.05
Silver	EPA 6020	µg/dry g	0.05
Zinc	EPA 6020	µg/dry g	0.05

RL – Reporting Limit NA – Not applicable

1. Methods may be substituted by an equivalent method that is lower than or meets the project RL.
2. Analysis for PCBs includes the following constituents: PCB-8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209.

Table D-4.
Data Quality Objectives

Parameter	Accuracy	Precision	Recovery	Completeness
Field Measurements				
Water Velocity (for Flow calc.)	2%	NA	NA	90%
pH	+ 0.2 pH units	+ 0.5 pH units	NA	90%
Temperature	+ 0.5 oC	+ 5%	NA	90%
Dissolved Oxygen	+ 0.5 mg/L	+ 10%	NA	90%
Turbidity	10%	10%	NA	90%
Conductivity	5%	5%	NA	90%
Laboratory Analyses – Water				
Conventionals and Solids	80 – 120%	0 – 25%	80 – 120%	90%
Aquatic Toxicity	(1)	(2)	NA	90%
Nutrients(3)	80 – 120%	0 – 25%	90 – 110%	90%
Metals(3)	75 – 125%	0 – 25%	75 – 125%	90%
Dioxin(3)	50 – 150%	0 – 25%	50 – 150%	90%
Semi-Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Triazines(3)	50 – 150%	0 – 25%	50 – 150%	90%
Herbicides(3)	50 – 150%	0 – 25%	50 – 150%	90%
OC Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Congeners(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Aroclors(3)	50 – 150%	0 – 25%	50 – 150%	90%
OP Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
Laboratory Analyses – Sediment				
% Solids	NA	NA	NA	90%
Total Organic Carbon (TOC)	80 – 120%	0 – 25%	80 – 120%	90%
OC Pesticides(3)	25 – 140%	0 – 30%	25 – 140%	90%
PCB Congeners(3)	60 – 125%	0 – 30%	60 – 125%	90%
PAHs(3)	50 – 150%	0 – 25%	50 – 150%	90%
Metals(3)	60 – 130%	0 – 30%	60 – 130%	90%
Laboratory Analyses – Tissue				
Chlordane(3)	50 – 150%	0 – 25%	50 – 150%	90%
DDTs(3)	35 – 140%	0 – 30%	35 – 140%	90%

Dieldrin(3)	50 – 150%	0 – 25%	50 – 150%	90%

1. Must meet all method performance criteria relative to the reference toxicant test.
2. Must meet all method performance criteria relative to sample replicates.
3. See **Table D-2** and **Table D-3**for a list of individual constituents in each suite for water, sediment, and tissue, respectively.

D-1.3 Method Detection Limit Studies

Any laboratory performing analyses under this program must routinely conduct MDL studies to document that the MDLs are less than or equal to the project-specified RLs. If any analytes have MDLs that do not meet the project RLs, the following steps must be taken:

- Perform a new MDL study using concentrations sufficient to prove analyte quantitation at concentrations less than or equal to the project-specified RLs per the procedure for the Determination of the Method Detection Limit presented in Revision 1.1, 40 Code of Federal Regulations (CFR) 136, 1984.
- No samples may be analyzed until the issue has been resolved. MDL study results must be available for review during audits, data review, or as requested. Current MDL study results must be reported for review and inclusion in project files.

An MDL is developed from seven aliquots of a standard containing all analytes of interest spiked at five times the expected MDL. These aliquots are processed and analyzed in the same manner as environmental samples. The results are then used to calculate the MDL. If the calculated MDL is less than 0.33 times the spiked concentration, another MDL study should be performed using lower spiked concentrations.

D-1.4 Project Reporting Limits

Laboratories generally establish RLs that are reported with the analytical results—these may be called reporting limits, detection limits, reporting detection limits, or several other terms by the reporting laboratory. These laboratory limits must be less than or equal to the project RLs listed in **Table D-2**. Wherever possible, project RLs are lower than the relevant numeric criteria or toxicity thresholds. Laboratories performing analyses for this project must have documentation to support quantitation at the required levels.

D-1.5 Laboratory Standards and Reagents

All stock standards and reagents used for standard solutions and extractions must be tracked through the laboratory. The preparation and use of all working standards must be documented according to procedures outlined in each laboratory's Quality Assurance (QA) Manual; standards must be traceable according to USEPA, A2LA or National Institute for Standards and Technology (NIST) criteria. Records must have sufficient detail to allow determination of the identity, concentration, and viability of the standards, including any dilutions performed to obtain the working standard. Date of preparation, analyte or mixture, concentration, name of preparer, lot or cylinder number, and expiration date, if applicable, must be recorded on each working standard.

D-1.6 Sample Containers, Storage, Preservation, and Holding Times

Sample containers must be pre-cleaned and certified free of contamination according to the USEPA specification for the appropriate methods. Sample container, storage and preservation, and holding time requirements are provided in **Table D-5**. The analytical laboratories will supply sample containers that already contain preservative (**Table D-5**), including ultra-pure hydrochloric and nitric acid, where applicable. After collection, samples will be stored at 4°C until arrival at the contract laboratory.

Table D-5.
Sample Container, Sample Volume, Initial Preservation, and Holding Time Requirements for Parameters Analyzed at a Laboratory

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
Water				
Toxicity				
Initial Screening	Glass or FLPE-lined jerrican	40 L	Store at 4°C	36 hours(2)
Follow-Up Testing				
Phase I TIE				
E. coli (fresh)	PE	120 mL	$Na_2S_2O_3$ and Store at 4°C	8 hours
Oil and Grease	PE	250 mL	HCl and Store at 4°C	28 days
Chlorophyll a	Amber PE	1 L	Store at 4°C	Filter w/in 48 hours, 28 days
Cyanide	PE	1 L	NaOH and Store at 4°C	14 days
Dissolved Organic Carbon (DOC)	PE	250 mL	Store at 4°C	Filter/28 days
Total Organic Carbon (TOC)	PE	250 mL	H_2SO_4 and Store at 4°C	28 days
Total Petroleum Hydrocarbon	Glass	1 L	HCl or H_2SO_4 and Store at 4°C	7/40 days(3)
Biochemical Oxygen Demand	PE	1L	Store at 4°C	48 hours
Chemical Oxygen Demand	PE	500 mL	H_2SO_4 and Store at 4°C	28 days
MBAS	PE	1 L	Store at 4°C	48 hours
Fluoride	PE	500 mL	None required	28 days

Parameter	Sample Container	Sample Volume[1]	Immediate Processing and Storage	Holding Time
Chloride	PE	250 mL	Store at 4°C	28 days
Sulfate				28 days
Boron	PE	250-mL	Store at 4°C	180 days
Perchlorate	PE	500 mL	Store at 4°C	28 days
Nitrate Nitrogen	PE	250 mL	Store at 4°C	48 hours
Nitrite Nitrogen				
Orthophosphate-P				
Ammonia Nitrogen	Glass	250-mL	H2SO4 and Store at 4°C	28 days
Total and Dissolved Phosphorus				
Organic Nitrogen				
Nitrate + Nitrite (as N)				
Total Kjehdahl Nitrogen (TKN)	PE	250 mL	H2SO4 and Store at 4°C	28 days
Total Alkalinity	PE	500 mL	Store at 4°C	14 days
Suspended Sediment Concentration (SSC)	PE	250 mL	Store at 4°C	120 days
Total Suspended Solids (TSS)	PE	250 mL	Store at 4°C	7 days
Total Dissolved Solids (TDS)	PE	250 mL	Store at 4°C	7 days
Volatile Suspended Solids	PE	250 mL	Store at 4°C	7 days
Hardness	PE	500 mL	Store at 4°C	180 days
Metals				6 months[4]
Mercury	Glass	500 mL	Store at 4°C	48 Hours
Dioxin	Amber glass	2 x 1 L	Store at 4°C	1 year
PCBs, OC Pesticides, OP Pesticides,Triazine Pesticides	Amber glass	4 x 1 L	Store at 4°C	7/40 days[3]
Suspended Solids Analysis for Organics and Metals	Amber glass	20 x 1 L	Store at 4°C	1 year[5]
Herbicides	Glass	2 x 40 mL	Thiosulfate and Store at 4°C	14 days
Semivolatile Organic Compounds	Glass	2 x 1 L	Store at 4°C	7 days
Volatile Organic Compounds	VOA	3 x 40 mL	HCl and Store at 4°C	14 days
Sediment				

Parameter	Sample Container	Sample Volume(1)	Immediate Processing and Storage	Holding Time
% Solids	Glass	2 x 8 oz jar	Store at 4°C	7 days
Total Organic Carbon (TOC)				1 year(6)
OC Pesticides, PCBs, PAHs				1 year(5)
Metals				
Tissue				
% Lipids	teflon sheet	200 g	Store on dry ice	1 year(5)
Chlordane				
DDTs				
Dieldrin				

PE – Polyethylene

4. Additional volume may be required for QC analyses.
5. Tests should be initiated within 36 hours of collection. The 36-hour hold time does not apply to subsequent analyses for TIEs. For interpretation of toxicity results, samples may be split from toxicity samples in the laboratory and analyzed for specific chemical parameters. All other sampling requirements for these samples are as specified in this document for the specific analytical method. Results of these analyses are not for any other use (e.g., characterization of ambient conditions) because of potential holding time exceedances and variance from sampling requirements.
6. 7/40 = 7 days to extract and 40 days from extraction to analysis.
7. 6 months after preservation.
8. One year if frozen, otherwise 14 days to extract and 40 days from extraction to analysis.
9. One year if frozen, otherwise 28 days.

D-1.7 Aquatic Toxicity Testing and Toxicity Identification Evaluations

Aquatic toxicity testing supports the identification of BMPs to address sources of toxicity in urban runoff. Monitoring begins in the receiving water and the information gained is used to identify constituents for monitoring at outfalls to support the identification of pollutants that need to be addressed in the EWMP. The sub-sections below describe the detailed process for conducting aquatic toxicity monitoring, evaluating results, and the technical and logistical rationale. Control measures and management actions to address confirmed toxicity caused by urban runoff are addressed by the WMP, either via currently identified management actions or those that are identified via adaptive management of the WMP.

D-1.7.1 Sensitive Species Selection

The MRP (page E-32) states that a sensitivity screening to select the most sensitive test species should be conducted unless "a sensitive test species has already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s), then monitoring shall be conducted using only that test species." Previous relevant studies conducted

in the watershed should be considered. Such studies may have been completed via previous MS4 sampling, wastewater NPDES sampling, or special studies conducted within the watershed. The following discuss the species selection process for assessing aquatic toxicity in receiving waters.

As described in the MRP (page E-31), if samples are collected in receiving waters with salinity less than 1 part per thousand (ppt), or from outfalls discharging to receiving waters with salinity less than 1 ppt, toxicity tests should be conducted on the most sensitive test species in accordance with species and short-term test methods in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136). The freshwater test species identified in the MRP are:

- A static renewal toxicity test with the fathead minnow, Pimephales promelas (Larval Survival and Growth Test Method 1000.04).
- A static renewal toxicity test with the daphnid, Ceriodaphnia dubia (Survival and Reproduction Test Method 1002.05).
- A static renewal toxicity test with the green alga, Selenastrum capricornutum (also named Raphidocelis subcapitata) (Growth Test Method 1003.0).

The three test species were evaluated to determine if either a sensitive test species had already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s). In reviewing the available data in the watershed, metals, historical organics, and currently used pesticides have been identified as problematic and are generally considered the primary aquatic life toxicants of concern found in urban runoff. Given the knowledge of the presence of these potential toxicants in the watershed, the sensitivities of each of the three species were considered to evaluate which is the most sensitive to the potential toxicants in the watershed.

Ceriodaphnia dubia (C. dubia) has been reported as a sensitive test species for historical and current use pesticides and metals, and studies indicate that it is more sensitive to the toxicants of concern than Pimephales promelas (P. promelas) or Selenastrum capricornutum (S. capricornutum). In Aquatic Life Ambient Freshwater Quality Criteria - Copper, the USEPA reports greater sensitivity of C. dubia to copper (species mean acute value of 5.93 µg/l) compared to P. promelas (species mean acute value of 69.93 µg/l; EPA, 2007). C. dubia's relatively higher sensitivity to metals is common across multiple metals. Additionally, researchers at the University of California (UC), Davis reviewed available reported species sensitivity values in developing pesticide criteria for the Central Valley Regional Water Quality Control Board. The UC Davis researchers reported higher sensitivity of C. dubia to diazinon and bifenthrin (species mean acute value of 0.34 µg/l and 0.105 µg/l) compared to P. promelas (species mean acute value of 7804 µg/l and 0.405 µg/l; Palumbo et al., 2010a,b). Additionally, a study of the City of Stockton urban stormwater runoff found acute and chronic toxicity to C. dubia, with no toxicity to S. capricornutum or P. promelas (Lee and Lee, 2001). The toxicity was

attributed to organophosphate pesticides, indicating a higher sensitivity of C. dubia compared to S. capricornutum or P. promelas. C. dubia is also the test organism selected to assess the ambient toxicity of the Los Angeles River by the Los Angeles River Watershed Monitoring Program and has been the most-sensitive species to the Donald C. Tillman and the Los Angeles-Glendale Water Reclamation Plant effluent as well as the Los Angeles River receiving water in the vicinity of the water treatment plants. While P. promelas is generally less sensitive to metals and pesticides, this species can be more sensitive to ammonia than C. dubia. However, as ammonia is not typically a constituent of concern for urban runoff and ammonia is not consistently observed above the toxic thresholds in the watershed, P. promelas is not considered a particularly sensitive species for evaluating the impacts of urban runoff in receiving waters in the watershed.

S. capricornutum is a species sensitive to herbicides. However, while sometimes present in urban runoff, herbicides are not identified as a potential toxicant in the watershed. Additionally, S. capricornutum is not considered the most sensitive species as it is not sensitive to pyrethroids or organophosphate pesticides and is not as sensitive to metals as C. dubia. Additionally, the S. capricornutum growth test can be affected by high concentrations of suspended and dissolved solids, color, and pH extremes, which can interfere with the determination of sample toxicity. As a result, it is common to manipulate the sample by centrifugation and filtration to remove solids to conduct the test; however, this process may affect the toxicity of the sample. In a study of urban highway stormwater runoff (Kayhanian et. al, 2008), S. capricornutum response to the stormwater samples was more variable than the C. dubia and the P. promelas and in some cases the algal growth was possibly enhanced due to the presence of stimulatory nutrients. Also, in a study on the City of Stockton urban stormwater runoff (Lee and Lee, 2001) the S. capricornutum tests rarely detected toxicity where the C. dubia and the P. promelas regularly detected toxicity.

As C. dubia is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater potions of the watershed, C. dubia is selected as the most sensitive species. The species also has the advantage of being easily maintained in house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool. The ease of sample collection and higher sensitivity will support assessing the presence of ambient receiving water toxicity or long term effects of toxic stormwater over time. As such, toxicity testing in the freshwater portions of the watershed will be conducted using C. dubia. However, C. dubia test organisms are typically cultured in moderately hard waters (80-100 mg/L CaCO3) and can have increased sensitivity to elevated water hardness greater than 400 mg/L CaCO3), which is beyond their typical habitat range. Because of this, in instances where hardness in site waters exceeds 400 mg/L (CaCO3), an alternative test species may be used. Daphnia magna is more tolerant to high hardness levels and is a suitable substitution for C. dubia in these instances (Cowgill and Milazzo, 1990).

D-1.7.2 Testing Period

The following describes the testing periods to assess toxicity in samples collected in the WMP area during dry and wet weather conditions. Although wet weather conditions in the region generally persist for less than the chronic testing periods (typically 7 days), the *C. dubia* chronic testing, will be used for wet weather toxicity testing in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA, 2002b). Utilization of chronic tests on wet weather samples are not expected to generate results representative of the typical conditions found in the receiving water intended to be simulated by toxicity testing.

Chronic toxicity tests will be used to assess both survival and reproductive/growth endpoints for *C. dubia* in dry weather samples. Chronic testing will be conducted on undiluted samples in accordance with *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (USEPA, 2002a).

D-1.7.3 Toxicity Endpoint Assessment and Toxicity Identification Evaluation Triggers

Per the MRP, toxicity test endpoints will be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010). The Permit specifies that the chronic in-stream waste concentration (IWC) is set at 100% receiving water for receiving water samples and 100% effluent for outfall samples. Using the TST approach, a t-value is calculated for a test result and compared with a critical t-value from USEPA's TST Implementation Document (USEPA, 2010). Follow-up triggers are generally based on the Permit specified statistical assessment as described below.

For acute *C. dubia* toxicity testing, if a ≥50% reduction in survival or reproduction is observed between the sample and laboratory control that is statistically significant, a toxicity identification evaluation (TIE) will be performed.

TIE procedures will be initiated as soon as possible after the toxicity trigger threshold is observed to reduce the potential for loss of toxicity due to extended sample storage. If the cause of toxicity is readily apparent or is caused by pathogen related mortality (PRM) or epibiont interference with the test, the result will be rejected. If necessary, a modified testing procedure will be developed for future testing.

In cases where significant endpoint toxicity effects greater than 50% are observed in the original sample, but the follow-up TIE baseline "signal" is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity

D-1.7.4 Toxicity Identification Evaluation Approach

The results of toxicity testing will be used to trigger further investigations to determine the cause of observed laboratory toxicity. The primary purpose of conducting TIEs is to support the identification of management actions that will result in the removal of pollutants causing toxicity in receiving waters. Successful TIEs will direct monitoring at outfall sampling sites to inform management actions. As such, the goal of conducting TIEs is to identify pollutant(s) that should be sampled during outfall monitoring so that management actions can be identified to address the pollutant(s).

The TIE approach is divided into three phases as described in USEPA's 1991 Methods for Aquatic Toxicity Identification Evaluations – Phase I Toxicity Characterization Procedures – Second Edition (EPA/600/6-9/003) and briefly summarized as follows:

- Phase I utilizes methods to characterize the physical/chemical nature of the constituents which cause toxicity. Such characteristics as solubility, volatility and filterability are determined without specifically identifying the toxicants. Phase I results are intended as a first step in specifically identifying the toxicants but the data generated can also be used to develop treatment methods to remove toxicity without specific identification of the toxicants.
- Phase II utilizes methods to specifically identify toxicants.
- Phase III utilizes methods to confirm the suspected toxicants.

A Phase I TIE will be conducted on samples that exceed a TIE trigger described above. Water quality data will be reviewed to future support evaluation of potential toxicants. TIEs will perform the manipulations described in **Table D-6**. TIE methods will generally adhere to USEPA procedures documented in conducting TIEs (USEPA, 1991, 1992, 1993a-b).

Table D-6.
Aquatic Toxicity Identification Evaluation Sample Manipulations

TIE Sample Manipulation	Expected Response
pH Adjustment (pH 7 and 8.5)	Alters toxicity in pH sensitive compounds (i.e., ammonia and some trace metals)
Filtration or centrifugation*	Removes particulates and associated toxicants
Ethylenedinrilo-Tetraacetic Acid (EDTA) or Cation Exchange Column*	Chelates trace metals, particularly divalent cationic metals
Sodium thiosulfate (STS) addition	Reduces toxicants attributable to oxidants (i.e., chlorine) and some trace metals
Piperonyl Butoxide (PBO) *	Reduces toxicity from organophosphate pesticides such as diazinon, chlorpyrifos and malathion, and enhances pyrethroid toxicity
Carboxylesterase addition(1)	Hydrolyzes pyrethroids
Temperature adjustments(2)	Pyrethroids become more toxic when test temperatures are decreased
Solid Phase Extraction (SPE) with C18 column*	Removes non-polar organics (including pesticides) and some relatively non-polar metal chelates
Sequential Solvent Extraction of C18 column	Further resolution of SPE-extracted compounds for chemical analyses
No Manipulation*	Baseline test for comparing the relative effectiveness of other manipulations

* Denotes treatments that will be conducted during the initiation of toxicity monitoring, but may be revised as the program is implemented. These treatments were recommended for initial stormwater testing in Appendix E (Toxicity Testing Tool for Storm Water Discharges) of the State Water Resources Control Board's June 2012 Public Review Draft "Policy for Toxicity Assessment and Control".

1. Carboxylesterase addition has been used in recent studies to help identify pyrethroid-associated toxicity (Wheelock et al., 2004; Weston and Amweg, 2007). However, this treatment is experimental in nature and should be used along with other pyrethroid-targeted TIE treatments (e.g., PBO addition).
2. Temperature adjustments are another recent manipulation used to evaluate pyrethroid-associated toxicity. Lower temperatures increase the lethality of pyrethroid pesticides. (Harwood, You and Lydy, 2009)

The ESGV Group will identify the cause(s) of toxicity using the treatments in **Table D-6** and, if possible, using the results of water column chemistry analyses. After any initial determinations of the cause of toxicity, the information may be used during future events to modify the targeted treatments to more closely target the expected toxicant or to provide additional treatments to narrow the toxicant cause(s). Moreover, if the toxicant or toxicant class is not initially identified, toxicity monitoring during subsequent events will confirm if the toxicant is persistent or a short-term episodic occurrence.

As the primary goals of conducting TIEs is to identify pollutants for incorporation into outfall monitoring, narrowing the list of toxicants following Phase I TIEs via Phase II or III TIEs is not necessary if the toxicant class determined during the Phase I TIE is sufficient for: (1) identifying additional pollutants for outfall monitoring; and/or (2) identifying control measures. Thus, if the specific pollutant(s) or the analytical class of pollutant (e.g., metals that are analyzed via USEPA Method 200.8) are identified then sufficient information is available to inform the addition of pollutants to outfall monitoring.

Phase II TIEs may be ntify the pollutant or analytical class of pollutants, the result of a TIE is considered conclusive. utilized to identify specific constituents causing toxicity in a given sample if information beyond what is gained via the Phase I TIE and review of chemistry data is needed to identify constituents to monitor or management actions. Phase III TIEs will be conducted following any Phase II TIEs.

For the purposes of determining whether a TIE is inconclusive, TIEs will be considered inconclusive if:

- The toxicity is persistent (i.e., observed in the baseline), and
- The cause of toxicity cannot be attributed to a class of constituents (e.g., insecticides, metals, etc.) that can be targeted for monitoring.

If (1) a combination of causes that act in a synergistic or additive manner are identified; (2) the toxicity can be removed with a treatment or via a combination of the TIE treatments; or (3) the analysis of water quality data collected during the same event ide

In cases where significant endpoint toxicity effects ≥50% are observed in the original sample, but the follow-up TIE baseline “signal” is not statistically significant, the cause of toxicity will be considered non-persistent. No immediate follow-up testing is required on the sample. However, future test results should be evaluated to determine if parallel TIE treatments are necessary to provide an opportunity to identify the cause of toxicity.

Note that the MRP (page E-33) allows a TIE Prioritization Metric (as described in Appendix E of the Southern California Stormwater Monitoring Coalition’s (SMC) Model Monitoring Program) for use in ranking sites for TIEs. However, as the extent to which TIEs will be conducted is unknown, prioritization cannot be conducted at this time. However, prioritization may be utilized in the future based on the results of toxicity monitoring and an approach to prioritization will be developed through the CIMP adaptive management process and will be described in future versions of the CIMP.

13.1.1 Follow Up on Toxicity Testing Results

Per Parts VIII.B.c.vi and XI.G.1.d of the MRP, if the results of a TIE on a receiving sample are inconclusive, a toxicity test conducted during the same condition (i.e., wet or dry weather), using the same test species, will be conducted at applicable upstream outfalls as soon as feasible (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a inconclusive TIE). The same TIE approach presented in Sections D-1.7.3 and D-1.7.4, respectively will be followed based on the results of the outfall sample.

If a toxicant or class of toxicants is identified through a TIE, the MRP (page E-33) indicates the following actions should be taken:

- ULARWMAG Members shall analyze for the toxicant(s) during the next scheduled sampling event in the discharge from the outfall(s) upstream of the receiving water location.
- If the toxicant is present in the discharge from the outfall at levels above the applicable receiving water limitation, a toxicity reduction evaluation (TRE) will be performed for that toxicant.

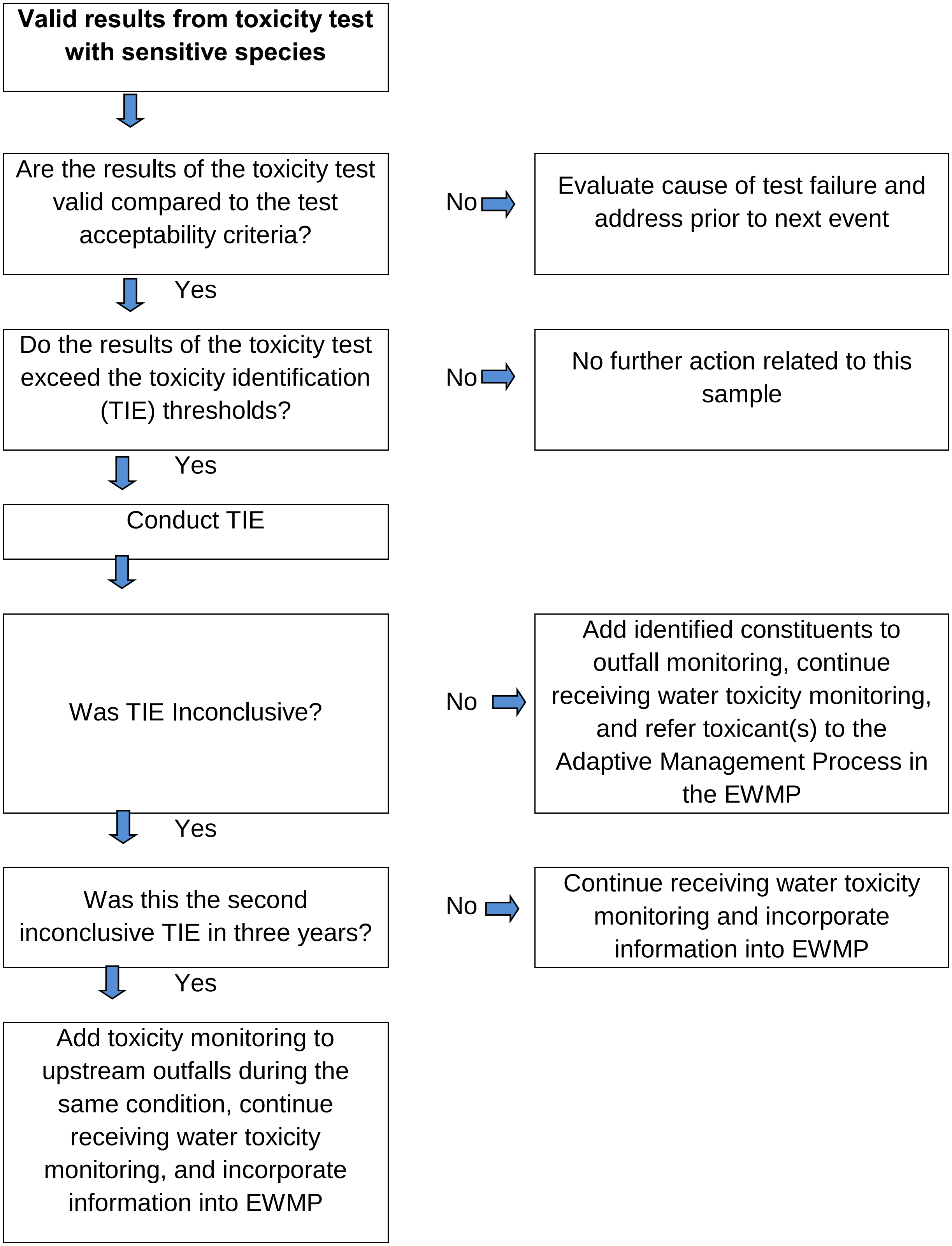
The list of constituents monitored at outfalls identified in the CIMP will be modified based on the results of the TIEs. Monitoring for constituents identified based on the results of a TIE will occur as soon as feasible following the completion of a successful TIE (i.e., the next monitoring event that is at least 45 days following the toxicity laboratory's report transmitting the results of a successful TIE).

The requirements of the TREs will be met as part of the adaptive management process in the ULAR EWMP rather than conducted via the CIMP. The identification and implementation of control measures to address the causes of toxicity are tied to management of the stormwater program, not the CIMP. It is expected that the requirements of TREs will only be conducted for toxicants that are not already addressed by an existing Permit requirement (i.e., TMDLs) or existing or planned management actions.

D-1.7.5 Summary of Aquatic Toxicity Monitoring

The approach to conducting aquatic toxicity monitoring as described in the previous sections of this Attachment is summarized in detail in **Figure D-2**. The intent of the approach is to identify the cause of toxicity observed in receiving water to the extent possible with the toxicity testing tools available, thereby directing outfall monitoring for the pollutants causing toxicity with the ultimate goal of supporting the development and implementation of management actions.

Figure D-2.
Detailed Aquatic Toxicity Assessment Process



D-1.8 Bio-Assessment/Macrobenthic Community Assessment

The LACFCD has indicated that it will continue its participation in the SMC Regional Bioassessment Monitoring Program on behalf of the ESGV Group. Thus no specific monitoring and analytical procedures are included in the CIMP at this time. If in the future, such monitoring is necessary under this program, the CIMP will be revised to include appropriate procedures.

D-1.8.1 List of Laboratories Conducting Analysis

The chosen laboratories will be able to meet the measurement quality objectives set forth in **Table D-2** through **Table D-4**. Laboratories will meet California Environmental Laboratory Accreditation Program (ELAP) and/or National Environmental Laboratory Accreditation Program (NELAP) certifications and any data quality requirements specified in this document. Due to contracting procedures and solicitation requirements, qualified laboratories have not yet been selected to carry out the analytical responsibilities described in this CIMP. Selected laboratories will be listed along with lab certification information in **Table D-7**. Following the completion of the first monitoring year, the CIMP will be updated to include the pertinent laboratory specific information. At the end of all future monitoring years the ESGV Group will assess the laboratories performance and at that time a new laboratory may be chosen.

Table D-7.
Summary of Laboratories Conducting Analysis for the ESVG CIMP

Laboratory(1)	General Category of Analysis	Lab Certification No. & Expiration Date(2)

1. Information for all laboratories will be added to this table following their selection and upon CIMP update.

2. Lab certifications are renewed on an annual basis.

In the event that the laboratories selected to perform analyses for the CIMP are unable to fulfill data quality requirements outlined herein (e.g., due to instrument malfunction), alternate laboratories need to meet the same requirements that the primary labs have met. The original laboratory selected may recommend a qualified laboratory to act as a substitute. However, the final decision regarding alternate laboratory selection rests with the ESGV Group.

D-2 Sampling Method and Sample Handling

The following sections describe the steps to be taken to properly prepare for and initiate water quality sampling for the CIMP.

D-2.1 Monitoring Event Preparation

Monitoring event preparation includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps will be completed two weeks prior to each sampling event (a condensed timeline may be appropriate in storm events, which may need to be completed on short notice):

1. Contact laboratories to order sample containers and to coordinate sample transportation details.
2. Confirm scheduled monitoring date with field crew(s), and set-up sampling day itinerary including sample drop-off.
3. Prepare equipment.
4. Prepare sample container labels and apply to bottles.
5. Prepare the monitoring event summary and field log sheets to indicate the type of field measurements, field observations and samples to be collected at each of the monitoring sites.
6. Verify that field measurement equipment is operating properly (i.e., check batteries, calibrate, etc.)

Table D-8 provides a checklist of field equipment to prepare prior to each monitoring event.

Table D-8.
Field Equipment Checklist

☐	Monitoring Plan
☐	Sample Containers plus Extras with Extra Lids
☐	Pre-Printed, Waterproof Labels (extra blank sheets)
☐	Event Summary Sheets
☐	Field Log Sheets
☐	Chain of Custody Forms
☐	Bubble Wrap
☐	Coolers with Ice
☐	Tape Measure
☐	Paper Towels or “Rags in a Box”
☐	Safety Equipment
☐	First Aid Kit
☐	Cellular Telephone
☐	Gate Keys
☐	Hip Waders
☐	Plastic Trash Bags
☐	Sealable Plastic Bags
☐	Grab Pole
☐	Clean Secondary Container(s)
☐	Field Measurement Equipment
☐	New Powder-Free Nitrile Gloves
☐	Writing Utensils
☐	Stop Watch
☐	Camera
☐	Blank Water

D-2.1.1 Bottle Order/ Preparation

Sample container orders will be placed with the appropriate analytical laboratory at least two weeks prior to each sampling event. Containers will be ordered for all water samples, including quality control samples, as well as extra containers in case the need arises for intermediate containers or a replacement. The containers must be the proper type and size and contain preservative as appropriate for the specified laboratory analytical methods. **Table D-5** presents the proper container type, volume, and immediate processing and storage needs. The field crew must inventory sample containers upon receipt from the laboratory to ensure that adequate containers have been provided to meet analytical requirements for each monitoring event. After

each event, any bottles used to collect water samples will be cleaned by the laboratory and either picked up by or shipped to the field crew.

D-2.1.2 Container Labeling and Sample Identification Scheme

All samples will be identified with a unique identification code to ensure that results are properly reported and interpreted. Samples will be identified such that the site, sampling location, matrix, sampling equipment and sample type (i.e., environmental sample or QC sample) can be distinguished by a data reviewer or user. Sample identification codes will consist of a site identification code, a matrix code, and a unique sample identification code. The format for sample identification codes is ESGV- ###.# - AAAA - XXX, where:

- ESGV indicates that the sample was collected as part of the ESGV CIMP.
- ###- identifies the sequentially numbered monitoring event, and the # is an optional indicator for re-samples collected for the same event. Sample events are numbered from 001 to 999 and will not be repeated.
- AAAA indicates the unique site ID for each site.
- XXX identifies the sample number unique to a sample bottle collected for a single event. Sample bottles are numbered sequentially from 001 to 999 and will not be repeated within a single event.

Custom bottle labels should be produced using blank waterproof labels and labeling software. This approach will allow the site and analytical constituent information to be entered in advance and printed as needed prior to each monitoring event. Labels will be placed on the appropriate bottles in a dry environment; applying labels to wet sample bottles should be avoided. Labels should be placed on sides of bottles rather than on bottle caps. All sample containers will be pre-labeled before each sampling event to the extent practicable. Pre-labeling sample containers simplifies field activities, leaving only sample collection time and date and field crew initials to be filled out in the field. Labels should include the following information:

Program Name	Date	Analytical Requirements
Station ID	Collection Time	Preservative Requirements
Sample ID	Sampling Personnel	Analytical Laboratory

D-2.1.3 Field Meter Calibration

Calibration of field measurement equipment is performed as described in the owner's manuals for each individual instrument. Each individual field crew will be responsible for calibrating their field measurement equipment. Field monitoring equipment must meet the requirements outlined in **Table D-1**and be calibrated before field events based on manufacturer guidance, but at a

minimum prior to each event. **Table D-9** outlines the typical field instrument calibration procedures for each piece of equipment requiring calibration. Each calibration will be documented on each event's calibration log sheet (presented in Appendix 1)

If calibration results do not meet manufacturer specifications, the field crew should first try to recalibrate using fresh aliquots of calibration solution. If recalibration is unsuccessful, new calibration solution should be used and/or maintenance should be performed. Each attempt should be recorded on the equipment calibration log. If the calibration results cannot meet manufacturer's specifications, the field crew should use a spare field measuring device that can be successfully calibrated. If a spare field measuring device that can be successfully calibrated is unavailable, field crews shall note the use of unsuccessfully calibrated equipment on each appropriate field log sheet. Additionally, the ESGV Group should be notified.

Calibration should be verified using at least one calibration fluid within the expected range of field measurements, both immediately following calibration and at the end of each monitoring day. Individual parameters should be recalibrated if the field meters do not measure a calibration fluid within the range of accuracy presented in **Table D-1**. Calibration verification documentation will be retained in the event's calibration verification log (presented in Appendix 1).

Table D-9.
Calibration of Field Measurement Equipment

Equipment / Instrument	Calibration and Verification Description	Frequency of Calibration	Frequency of Calibration Verification	Responsible Party
pH Probe	Calibration for pH measurement is accomplished using standard buffer solutions. Analysis of a mid-range buffer will be performed to verify successful calibration.	Day prior to 1st day or 1st day of sampling event	After calibration and at the end of each sampling day	Individual Sampling Crews
Temperature	Temperature calibration is factory-set and requires no subsequent calibration.			
Dissolved Oxygen Probe	Calibration for dissolved oxygen measurements is accomplished using a water saturated air environment. Dissolved oxygen (DO) measurement of water-saturated air will be performed and compared to a standard table of DO concentrations in water as a function of temperature and barometric pressure to verify successful calibration.			
Conductivity	Conductivity calibration will follow manufacturer's specifications. A mid-range conductivity standard will be analyzed to verify successful calibration.			
Turbidity	Turbidity calibration will follow manufacturer's specifications. A mid-range turbidity standard will be analyzed to verify successful calibration.			

D-2.1.4 Weather Conditions

Monitoring will occur during dry and wet conditions. Dry weather is defined in the MRP as when the flow of the receiving water body is less than 20 percent greater than the base flow or as defined by effective TMDLs within the watershed. As noted in the Metals TMDL, the 90th percentile flow measured at S14 is 1 cfs, dry weather conditions are operationally defined as where flow measured at the S14 station is less than 1 cfs. Wet weather conditions are defined in the MRP as when the receiving water body has flow that is at least 20 percent greater than its base flow or as defined by effective TMDLs within the watershed. Wet weather conditions for triggering storm events will be defined as a 70 percent probable forecast of greater than 0.25 inches of precipitation of rain where the preceding 72 hours of dry weather has less than 0.1 inches of rain. The Metals TMDL operationally defines wet-weather where flow at the USGS gage station 11085000 is equal or greater than 260 cfs. Compliance with wet-weather metals allocations will be determined from loading estimates where flows at USGS gage 1108500 are measured greater than 260 cfs.

Note that if rainfall begins after dry weather monitoring has been initiated, then dry weather monitoring will be suspended and continued on a subsequent day when weather conditions meet the dry weather conditions. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Grab samples will be used for dry weather sampling events because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples during dry weather are consistent with similar programs within the region. However, to sufficiently characterize the receiving water during wet weather, composite samples will generally be used for wet weather sampling events. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, when the constituent of interest requires the use of grab samples (e.g., E. coli and oil and grease), situations where it is unsafe to collect composite samples, or to perform investigative monitoring where composite sampling or installation of an automatic sample compositor (autosampler) may not be warranted.

The MRP includes specific criteria for the time of monitoring events. With the exception of bacteria and metals monitoring, most constituents will be monitored during two dry weather monitoring events. For dry weather toxicity monitoring, sampling must take place during the historically driest month. As a result, the dry weather monitoring event that includes toxicity monitoring will be conducted in July. The second dry weather monitoring event will take place during January unless sampling during another month is deemed to be preferable.

The first significant rain event of the storm year (first flush) will be monitored. The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River over at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from a given storm event. For example, storm events that will require field crews to collect wet weather samples during holidays and/or weekends may not be sampled due to sample collection or laboratory staffing constraints.

For a storm to be tracked, the first flush event will have a predicted rainfall of at least 0.25 inches with at least a 70 percent probability of rainfall 24 hours prior to the forecasted time of initial rainfall. Subsequent storm events must meet the tracking requirements, flow objectives, as well as be separated by a minimum of three days of dry weather. Antecedent conditions will be based on the LA County Department of Public Works (LACDPW) rain gage listed in **Table D-10**. The rain gage has been used to define wet and dry weather during TMDL monitoring in the watershed since 2009. Data can be obtained at http://dpw.lacounty.gov/wrd/Precip/index.cfm by clicking the 'See Data' link in the "Near Real-Time Precipitation Map" section. The web page displays a map showing real-time rainfall totals (in inches) for different rain gages. Although the default precipitation period is 24 hours, the user can view rainfall totals over different durations. Data from the rain gages is updated every 10 minutes.

Table D-10.
Real-Time Rain Gage Used to Define Weather Conditions for CIMP Monitoring[(1)]

Rainfall Gage	Operator	Gage Type	Latitude	Longitude
University of Southern California (USC) (375)	Los Angeles County Department of Public Works	Manually Observed Non-Mechanical Rain Gage	34.0226	-118.2908

1. Information for the gage can be found at http://dpw.lacounty.gov/wrd/Precip/alertlist.cfm.

The targeted storm events for wet weather sampling will be selected based on a reasonable probability that the events will result in substantially increased flows in the San Gabriel River for at least 12 hours. Sufficient precipitation is needed to produce runoff and increase flow. The decision to sample a storm event will be made in consultation with weather forecasting information services after a quantitative precipitation forecast (QPF) has been determined. All efforts will be made to collect wet weather samples from all sites during a single targeted storm event. However, safety or other factors may make it infeasible to collect samples from the same storm event.

For the purpose of triggering wet weather sampling preparation, field staff can estimate that any rainfall prediction for downtown Los Angeles of 0.1-0.5 inches in a 6- to 12-hour period would be sufficient to mobilize for wet weather sampling, or by utilizing the analyses of the CMP staff. The sampling crew should prepare to depart at the forecasted time of initial rainfall. The first of the four manual composite samples should be targeted for collection within 2 hours of local rainfall.

Publicly available meteorological forecasting systems are suggested for identifying and anticipating storm event sampling for the Study. The sampling decision protocol begins when the sampling crew recognizes an approaching storm, through weekly monitoring of forecasts. The National Weather Service's weather forecast for downtown Los Angeles can be accessed on-line at:

http://www.wrh.noaa.gov/lox/ then click on "Los Angeles" on the area map

From the forecast page, the link to "Quantitative Precipitation Forecast" provides forecasted precipitation in inches for the next 24 hours, in 3-hour increments for the first 12 hours and in 6-hour increments for the last 12 hours.

D-2.1.5 Flow Gage Measurements

USGS flow gages along the San Gabriel River will be used to determine whether the receiving water flow has exceeded the 20 percent threshold. Flows above the 20 percent threshold will classify the receiving water body as being in “wet” conditions and flows that are less than the 20 percent threshold will be “dry” conditions. In addition to the USGS rain gages, field crews will monitor flow at each of the sampling sties. **Table D-11** presents the location of flow gages located on the San Gabriel River.

Table D-11.
SGR and Tributary Flow Gages

Water Body	Water Body Type	Gage Location	Gage ID
San Gabriel River	Main Stem	San Gabriel River Below Santa Fe Dam	SGRS

D-2.2 Sample Handling

Proper sampling handling ensures the samples will comply with the monitoring methods and analytical hold time and provides traceable documentation throughout the history of the sample.

D-2.2.1 Documentation Procedures

The ESGV Group is responsible for ensuring that each field sampling team adheres to proper custody and documentation procedures. Field log sheets documenting sample collection and other monitoring activities for each site will be bound in a separate master logbook for each event. Field personnel have the following responsibilities:

1. Keep an accurate written record of sample collection activities on the field log sheets.
2. Ensure that all field log sheet entries are legible and contain accurate and inclusive documentation of all field activities.
3. Note errors or changes using a single line to cross out the entry and date and initial the change.
4. Ensure that a label is affixed to each sample collected and that the labels uniquely identify samples with a sample ID, site ID, date and time of sample collection and the sampling crew initials.
5. Complete the chain of custody forms accurately and legibly.

D-2.2.2 Field Documentation/ Field Log

Field crews will keep a field log book for each sampling event that contains a calibration log sheet, a field log sheet for each site, and appropriate contact information. The following items should be recorded on the field log sheet for each sampling event:

- Monitoring station location (Station ID);
- Date and time(s) of sample collection;
- Name(s) of sampling personnel;
- Sample collection depth;
- Sample ID numbers and unique IDs for any replicate or blank samples;
- QC sample type (if appropriate);
- Requested analyses (specific parameters or method references);
- Sample type (e.g., grab or composite);
- The results of field measurements (e.g., flow, temperature, dissolved oxygen, pH, conductivity, turbidity) and the time that measurements were made;
- Qualitative descriptions of relevant water conditions (e.g., water color, flow level, clarity) or weather (e.g., wind, rain) at the time of sample collection;
- Trash observations (presence/absence);
- Observations of recreational activities;
- A description of any unusual occurrences associated with the sampling event, particularly those that may affect sample or data quality.

The field log will be scanned into a PDF within one week of the conclusion of each sampling event. Alternatively, all measurements could be collected on an electronic device such as laptop or tablet computer. Attachment 1 contains an example of the field log sheet

D-2.2.3 Sample Handling and Shipment

The field crews will have custody of samples during each monitoring event. Chain-of-custody (COC) forms will accompany all samples during shipment to contract laboratories to identify the shipment contents. All water quality samples will be transported to the analytical laboratory by the field crew or by courier. The original COC form will accompany the shipment, and a signed copy of the COC form will be sent, typically via fax, by the laboratory to the field crew to be retained in the project file.

While in the field, samples will be stored on ice in an insulated container. Samples that must be shipped to the laboratory must be examined to ensure that container lids are tight and placed on ice to maintain the appropriate temperature. The ice packed with samples must be approximately 2 inches deep at the top and bottom of the cooler, and must contact each sample to maintain temperature. The original COC form(s) will be double-bagged in re-sealable plastic bags and either taped to the outside of the cooler or to the inside lid. Samples must be shipped to the contract laboratory according to transportation standards. The method(s) of shipment, courier name, and other pertinent information should be entered in the "Received By" or "Remarks" section of the COC form.

Coolers must be sealed with packing tape before shipping, unless transported by field or lab personnel, and must not leak. It is assumed that samples in tape-sealed ice chests are secure whether being transported by common carrier or by commercial package delivery. The laboratory's sample receiving department will examine the shipment of samples for correct documentation, proper preservation and compliance with holding times. The following procedures are used to prevent bottle breakage and cross-contamination:

- Bubble wrap or foam pouches are used to keep glass bottles from contacting one another to prevent breakage, re-sealable bags will be used if available.
- All samples are transported inside hard plastic coolers or other contamination-free shipping containers.
- If arrangements are not made in advance, the laboratory's sample receiving personnel must be notified prior to sample shipment.

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility of the personnel of each analytical laboratory to ensure that all applicable regulations are followed in the disposal of samples or related chemicals. Samples will be stored and transported as noted in **Table D-5**. Samples not analyzed locally will be sent on the same day that the sample collection process is completed, if possible. Samples will be delivered to the appropriate laboratory as will be indicated in **Table D-12**. Note that due to procurement procedures, the analytical laboratories have not been identified at this time. Information for all laboratories will be added to this table following their selection and upon CIMP update. Appropriate contacts will be listed along with lab certification information in **Table D-12**.

Table D-12.
Information on Laboratories Conducting Analysis for the ESGV CIMP

Laboratory[1]	General Category of Analysis	Shipping Method	Contact	Phone	Address	Lab Certification No. & Expiration Date[2]

1 Information for all laboratories will be added to this table following their selection and upon CIMP update.
2 Lab certifications are renewed on an annual basis.

D-2.2.4 Chain-of Custody Forms

Sample custody procedures provide a mechanism for documenting information related to sample collection and handling. Sample custody must be traceable from the time of sample collection until results are reported. A sample is considered under custody if:

- It is in actual possession
- It is in view after in physical possession
- It is placed in a secure area (accessible by or under the scrutiny of authorized personnel only after in possession)

A COC form must be completed after sample collection and prior to sample shipment or release. The COC form, sample labels, and field documentation will be cross-checked to verify sample identification, type of analyses, number of containers, sample volume, preservatives, and type of containers. A complete COC form is to accompany the transfer of samples to the analyzing laboratory. A typical COC form is presented in Attachment 1.

D-2.2.5 Laboratory Custody Procedures

Laboratories will follow sample custody procedures as outlined in the laboratory's QA Manual. A copy of each contract laboratory's QA Manual should be available at the laboratory upon request. Laboratories shall maintain custody logs sufficient to track each sample submitted and to analyze or preserve each sample within specified holding times. The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedures;
- Verify sample preservation (e.g., temperature);
- Notify the ESGV Group if any problems or discrepancies are identified; and,
- Perform proper sample storage protocols, including daily refrigerator temperature monitoring and sample security.

Laboratories shall maintain records to document that the above procedures are followed. Once samples have been analyzed, samples will be stored at the laboratory for at least 30 days. After this period, samples may be disposed of properly.

D-2.3 Field Protocols

Briefly, the key aspects of quality control associated with field protocols for sample collection for eventual chemical and toxicological analyses are as follows:

1. Field personnel will be thoroughly trained in the proper use of sample collection gear and will be able to distinguish acceptable versus unacceptable water samples in accordance with pre-established criteria
2. Field personnel will be thoroughly trained to recognize and avoid potential sources of sample

contamination (e.g., engine exhaust, ice used for cooling)

3. Sampling gear and utensils which come in direct contact with the sample will be made of non-contaminating materials (e.g., borosilicate glass, high-quality stainless steel and/or Teflon™, according to protocol) and will be thoroughly cleaned between sampling stations according to appropriate cleaning protocol (rinsing thoroughly at minimum)
4. Sample containers will be of the recommended type and will be free of contaminants (i.e., pre-cleaned)
5. Conditions for sample collection, preservation, and holding times will be followed

Field crews will be comprised of two persons per crew, minimum. For safety reasons, sampling will occur during daylight hours, when possible. Sampling on weekends and holidays will also be avoided. Other constraints on sampling events include, but are not limited to, lab closures and toxicity testing organism availability. Sampling events should proceed in the following manner:

1. Before leaving the sampling crew base of operations, confirm number and type of sample containers as well as the complete equipment list
2. Proceed to the first sampling site
3. Fill-out the general information on the field log sheet
4. Collect the environmental and quality assurance/quality control (QA/QC) samples indicated on the event summary sheet and store samples appropriately. Using the field log sheet, confirm that all appropriate containers were filled
5. Collect field measurements and observations, and record these on the field log sheet
6. Repeat the procedures in steps 3, 4, and 5 for each of the remaining sampling sites
7. Complete the COC forms using the information on the field log sheets
8. After sample collection is completed, deliver and/or ship samples to appropriate laboratory

D-2.4 Sample collection

All samples will be collected in a manner appropriate for the specific analytical methods to be used. The proper sampling techniques, outlined in this section, will ensure that the collected samples are representative of the water bodies sampled. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

D-2.4.1 Overview of Sampling Techniques

As described below, the method used to collect water samples is dependent on the depth, flow, and sampling location (receiving water, outfall). Nonetheless, in all cases:

1. Throughout each sample collection event, the sampler should exercise aseptic techniques to avoid any contamination (i.e., do not touch the inner surfaces or lip edges of the sample bottle or cap).
2. The sampler should use clean, powder-free, nitrile gloves for each site to prevent contamination
3. When collecting the sample, the sampler should not breathe, sneeze, or cough in the direction of the container

4. Gloves should be changed if they are soiled, or if the potential for cross-contamination exists from handling sampling materials or samples
5. While the sample is collected, the bottle lid shall not be placed on the ground
6. The sampler should not eat or drink during sample collection
7. The sampler should not smoke during sample collection
8. Each person on the field crew should wear clean clothing that is free of dirt, grease, or other substances that could contaminate the sampling apparatus or sample bottles
9. Sampling should not occur near a running vehicle. Vehicles should not be parked within the immediate sample collection area, even non-running vehicles
10. When the sample is collected, ample air space should be left in the bottle to facilitate mixing by shaking for lab analysis, unless otherwise required by the method
11. After the sample is collected and the cap is tightly screwed back on the bottle, the time of sampling should be recorded on the field log sheet
12. Any QA/QC samples that are collected should be also be noted on the field log sheet and labeled according the convention described in **Section D-1**
13. Samples should be stored as previously described
14. COC forms should be filled out as described in **Section D-2.2.4** of this Attachment and delivered to the appropriate laboratory as soon as feasible to ensure hold times are met

To prevent contamination of samples, clean metal sampling techniques using USEPA protocols outlined in USEPA Method 1669[1] will be used throughout all phases of the water sample collection. The protocol for clean metal sampling, based on USEPA Method 1669, is summarized below:

1. Samples are collected in rigorously pre-cleaned sample bottles with any tubing specially processed to clean sampling standards
2. At least two persons, wearing clean, powder-free nitrile or latex gloves at all times, are required on a sampling crew
3. One person, referred to as "dirty hands", opens only the outer bag of all double-bagged sample bottles
4. The other person, referred to as "clean hands", reaches into the outer bag, opens the inner bag and removes the clean sample bottle
5. Clean hands rinses the bottle at least two times by submerging the bottle, removing the bottle lid, filling the bottle approximately one-third full, replacing the bottle lid, gently shaking and then emptying the bottle. Clean hands then collects the sample by submerging the bottle, removing the lid, filling the bottle and replacing the bottle cap while the bottle is still submerged
6. After the sample is collected, the sample bottle is double-bagged in the opposite order from which it was removed from the same double-bagging
7. Clean, powder-free gloves are changed whenever something not known to be clean has been touched

1 USEPA. April 1995. *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels.* EPA 821-R-95-034.

D-2.4.2 Field Measurements and Observations

Field measurements will be collected and observations made at each sampling site after a sample is collected. Field measurements will include the parameters identified in the CIMP for which a laboratory analysis is not being conducted. Field monitoring equipment must meet the requirements outlined in **Table D-4**. Field measurements for sediment samples shall be collected from within one meter of the sediment. All field measurement results and field observations will be recorded on a field log sheet similar to the one presented in Appendix 1 and as described in **Section D-2.2.4** of this Attachment.

Measurements (except for flow) will be collected at approximately mid-stream, mid-depth at the location of greatest flow (if feasible) with a Hydrolab DS4 multi-probe meter, or comparable instrument(s). If at any time the collection of field measurements by wading appears to be unsafe, field crews will not attempt to collect mid-stream, mid-depth measurements. Rather, field measurements will be made either directly from a stable, unobstructed area at the channel edge, or by using a telescoping pole and intermediate container to obtain a sample for field measurements and for filling sample containers. For situations where flows are not sufficiently deep to submerge the probes, an intermediate container will be utilized. The location of field measurements will be documented on the field log sheet.

Flow measurements will be collected as outlined in the following subsections at freshwater receiving water and non-stormwater outfall monitoring sites. Regardless of measurement technique used, if a staff gage is present the gage height will be noted. Field crews may not be able to measure flow at several sites during wet weather because of inaccessibility of the site. If this is the case, site inaccessibility will be documented on the field log sheet.

The field sampling crew has the primary responsibility for responding to failures in the sampling or measurement systems. Deviations from established monitoring protocols will be documented in the comment section of the field log sheet and noted in the post event summaries. If monitoring equipment fails, monitoring personnel will report the problem in the notes section of the field log sheet and will not record data values for the variables in question. Broken equipment will be replaced or repaired prior to the next field use. Data collected using faulty equipment will not be used.

A-1.1.1.1 *Shallow Sheet Flow Measurements*

If the depth of flow does not allow for the measurement of flow with a velocity meter (<0.1-foot) a “float” will be used to measure the velocity of the flowing water. The width, depth, velocity, cross section, and corresponding flow rate will be estimated as follows:

- **Sheet flow width:** The width (W) of the flowing water (not the entire part of the channel that is damp) is measured at the “top”, “middle”, and “bottom” of a marked-off distance – generally 10 feet (e.g., for a 10-foot marked-off section, W_{Top} is measured at 0-feet, W_{Mid}

is measured at 5 feet, and W_{Bottom} is measured at 10 feet).

- **Sheet flow depth:** The depth of the sheet flow is measured at the top, middle, and bottom of the marked-off distance. Specifically, the depth (D) of the sheet flow is measured at 25%, 50%, and 75% of the flowing width (e.g., $D^{Mid}_{50\%}$ is the depth of the water at middle of the section in the middle of the sheet flow) at each of the width measurement locations. It is assumed that the depth at the edge of the sheet flow (i.e., at 0% and 100% of the flowing width) is zero.

- **Representative cross-section:** Based on the collected depth and width measurements, the representative cross-sectional area across the marked-off sheet flow is approximated as follows:

$$\begin{aligned}
&\text{Re}\mathit{presentative\ Cross\ Section} = \\
&\mathit{Average}\ \Big\{\Big[\frac{W_{Top}}{4}\times\Big(\frac{D^{Top}_{25\%}}{2}+\frac{\left(D^{Top}_{50\%}+D^{Top}_{25\%}\right)}{2}+\frac{\left(D^{Top}_{75\%}+D^{Top}_{50\%}\right)}{2}+\frac{D^{Top}_{75\%}}{2}\Big)\Big], \\
&\Big[\frac{W_{Mid}}{4}\times\Big(\frac{D^{Mid}_{25\%}}{2}+\frac{\left(D^{Mid}_{50\%}+D^{Mid}_{25\%}\right)}{2}+\frac{\left(D^{Mid}_{75\%}+D^{Mid}_{50\%}\right)}{2}+\frac{D^{Mid}_{75\%}}{2}\Big)\Big], \\
&\Big[\frac{W_{Bottom}}{4}\times\Big(\frac{D^{Bottom}_{25\%}}{2}+\frac{\left(D^{Bottom}_{50\%}+D^{Bottom}_{25\%}\right)}{2}+\frac{\left(D^{Bottom}_{75\%}+D^{Bottom}_{50\%}\right)}{2}+\frac{D^{Bottom}_{75\%}}{2}\Big)\Big]\Big\}
\end{aligned}$$

- **Sheet flow velocity:** Velocity is calculated based on the amount of time it took a float to travel the marked-off distance (typically 10-feet or more). Floats are normally pieces of leaves, litter, or floatables (suds, etc.). The time it takes the float to travel the marked-off distance is measured at least three times. Then average velocity is calculated as follows:

$$\mathit{Average\ Surface\ Velocity} = \frac{\mathit{Distance\ Marked\ off\ for\ Float\ Measurement}}{\mathit{Average\ Time\ for\ Float\ to\ Travel\ Marked\ off\ Distance}}$$

- **Flow Rate calculation:** For sheet flows, based on the above measurements/estimates, the estimated flow rate, Q, is calculated by:

$$Q = f\ x\ (\mathit{Representative\ Cross\ Section})\ x\ (\mathit{Average\ Surface\ Velocity})$$

The coefficient f is used to account for friction effects of the channel bottom. That is, the float travels on the water surface, which is the most rapidly-traveling portion of the water column. The average velocity, not the surface velocity, determines the flow rate, and thus f is used to "convert" surface velocity to average velocity. In general, the value of f typically ranges from 0.60 – 0.90 (USGS 1982). Based on flow rate measurements taken during the LA River Bacteria Source Identification Study (CREST 2008) a value of 0.75 will be used for f.

A-1.1.1.2 *Free-flowing Outfalls*

Some storm drain outfalls are free-flowing, meaning the runoff falls from an elevated outfall into the channel, which allows for collection of the entire flowing stream of water into a container of known volume (e.g., graduated bucket or graduated Ziploc bag). The time it takes to fill the known volume is measured using a stopwatch, and recorded on the field log. The time it takes to fill the container will be measured three times and averaged to ensure that the calculated discharge is representative. In some cases, a small portion of the runoff may flow around or under the container. For each measurement, "percent capture", or the proportion of flow estimated to enter the bucket, will be recorded. For free-flowing outfalls, the estimated flow rate, Q, is calculated by:

$$Q = Average\left[\frac{Filled\ container\ Volume}{(Time\ to\ Fill\ Container) \times (Estimated\ Capture)}\right]$$

Based on measurements of free-flowing outfalls during the LA River Bacteria Source Identification Study (CREST, 2008), estimated capture typically ranges from 0.75 – 1.0.

A-1.1.1.3 *Sampling Techniques for the Collection of Water*

The following subsections provide details on the various techniques that can be utilized to collect water quality samples. Should field crews feel that it is unsafe to collect samples for any reason, the field crews SHOULD NOT COLLECT a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

A-1.1.1.4 *Direct Submersion: Hand Technique*

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.

2. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid. In the case of mercury samples, remove the lid underwater to reduce the potential for contamination from the air.
3. Place the sample on ice.
4. Collect the remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.5 *Intermediate Container Technique*

Samples may be collected with the use of a clean intermediate container, if necessary, following the steps listed below. An intermediate container may include a container that is similar in composition to the sample container, a pre-cleaned pitcher made of the same material as the sample container, or a Ziploc bag. An intermediate container should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Submerge the intermediate container to mid-stream/mid-depth (if possible), let the container fill, and quickly transfer the sample into the individual sample container(s) and secure the lid(s).
3. Place the sample(s) on ice.
4. Collect remaining samples including quality control samples, if required, using the same protocols described above.
5. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

Some flows may be too shallow to fill a container without using an intermediate container. When collecting samples from shallow sheet flows it is very important to not scoop up algae, sediment, or other particulate matter on the bottom because such debris is not representative of flowing water. To prevent scooping up such debris either: (1) find a spot where the bottom is relatively clean and allow the sterile intermediate container to fill without scooping; or (2) lay a clean sterile Ziploc® bag on the bottom and collect the water sample from on top of the bag. A fresh Ziploc® bag must be used at each site.

A-1.1.1.6 *Pumping*

Samples may be collected with the use of a peristaltic pump and specially cleaned tubing following the steps listed below. Sample tubing should not be reused at a different site without appropriate cleaning.

1. Follow the standard sampling procedures described in **Section D-2.4.1** of this Attachment.
2. Attach pre-cleaned tubing into the pump, exercising caution to avoid allowing tubing ends to touch any surface known not to be clean. A separate length of clean tubing must be used at each sample location for which the pump is used.
3. Place one end of the tubing below the surface of the water. To the extent possible, avoid placing

the tubing near the bottom so that settled solids are not pumped into the sample container.
4. Hold the other end of the tubing over the opening of the sample container, exercising care not to touch the tubing to the sample container.
5. Pump the necessary sample volume into the sample container and secure the lid.
6. Place the sample on ice.
7. Collect remaining samples including quality control samples, if required, using the same protocols described above.
8. Follow the sample handling procedures described in **Section D-2.2** of this Attachment.

A-1.1.1.7 *Autosamplers*

Autosamplers are used to characterize the entire flow of a storm in one analysis. They can be programmed to take aliquots at either time- or flow-based specified intervals. Before beginning setup in the field, it is recommended to read the manufacturer's instructions. The general steps to set up the autosampler are described below:

1. Connect power source to autosampler computer. This can be in the form of a battery or a power cable.
2. Install pre-cleaned tubing into the pump. Clean tubing will be used at each site and for each event, in order to minimize contamination.
3. Attach strainer to intake end of the tubing and install in sampling channel.
4. If running flow based composite samples; install flow sensor in sampling channel and connect it to the automatic compositor.
5. Label and install composite bottle(s). If sampler is not refrigerated, then add enough ice to the composite bottle chamber to keep sample cold for the duration of sampling or until such time as ice can be refreshed. Make sure not to contaminate the inside of the composite bottle with any of the ice.
6. Program the autosampler as per the manufacturer's instructions and make sure the autosampler is powered and running before leaving the site.

After the sample collection is completed the following steps must be taken to ensure proper sample handling:

1. Upon returning to the site, check the status of the autosampler and record any errors or missed samples. Note on the field log the time of the last sample, as this will be used for filling out the COCs.
2. Remove the composite bottle and store on ice. If dissolved metals are required, then begin the sample filtration process outlined in the following subsection, within 15 minutes of the last composite sample, unless compositing must occur at another location, in which case the filtration process should occur as soon as possible upon sample compositing.
3. Power down autosampler and leave sampling site.
4. The composite sample will need to be split into the separate analysis bottles either before being shipped to the laboratory or at the laboratory. This is best done in a clean and weatherproof environment, using clean sampling technique.

A-1.1.1.8 *Dissolved Metals Field Filtration*

When feasible, samples for dissolved metals will be filtered in the field. The following describes an appropriate dissolved field filtration method. An alternative an equivalent method may be utilized, if necessary. A 50mL plastic syringe with a 0.45μm filter attached will be used to collect and filter the dissolved metals sample in the field. The apparatus will either come certified pre-cleaned from the manufacturer and confirmed by the analytical laboratory or be pre-cleaned by and confirmed by the analytical laboratory at least once per year. The apparatus will be double bagged in Ziploc plastic bags.

To collect the sample for dissolved metals, first collect the total metals sample using clean sampling techniques. The dissolved sample will be taken from this container. Immediately prior to collecting the dissolved sample, shake the total metals sample. To collect the dissolved metals sample using clean sampling techniques, remove the syringe from the bag and place the tip of the syringe into the bottle containing the total metals sample and draw up 50 mL of sample into the syringe. Next, remove the filter from the zip-lock bag and screw it tightly into the tip of the syringe. Then put the tip of the syringe with the filter into the clean dissolved metals container and push the sample through the filter taking care not to touch the inside surface of the sample container with the apparatus. The sample volume needs to be a minimum of 20 mL. If the filter becomes clogged prior to generating 20 mL of sample, remove and dispose of the used filter and replace it with a new clean filter (using the clean sampling techniques). Continue to filter the sample. When 20 mL has been collected, cap the sample bottle tightly and store on ice for delivery to the laboratory.

D-2.4.3 Receiving Water Sample Collection

A grab sample is a discrete individual sample. A composite sample is a mixture of samples collected over a period of time either as time or flow weighted. A time-weighted composite is created by mixing multiple aliquots collected at specified time intervals. A flow-weighted composite is created by mixing multiple aliquots collected at equal time intervals but where the volume of the aliquot is based on flow rate. Generally, grab samples will be collected during dry weather and composite samples will be collected during wet weather. Should field crews feel that it is unsafe to collect samples for any reason, the field crews **SHOULD NOT COLLECT** a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

Grab samples will be used for dry weather sampling events, because the composition of the receiving water will change less over time; and thus, the grab sample can sufficiently characterize the receiving water. Grab samples will be collected as described in **Section D-2.4.1** of this Attachment. Monitoring site configuration and consideration of safety will dictate grab sample collection technique. The potential exists for monitoring sites to lack discernable flow. Except in the case of lakes, the lack of discernable flow may generate unrepresentative data. To address the potential confounding interference that can occur under such conditions, sites sampled should be assessed for the following conditions and sampled or not sampled accordingly:

- Pools of water with no flow or no visible connection to another surface water body should not be sampled. The field log should be completed for non-water quality data (including date and time of visit) and the site condition should be photo-documented.
- Flowing water (i.e., based on visual observations, flow measurements, and a photo-documented assessment of conditions immediately upstream and downstream of the sampling site) site should be sampled.

Wet weather samples will generally be collected as either time- or flow-weighted composites. Grab samples may be utilized to collect wet weather sampling in certain situations, which may include, but are not limited to, situations where it is unsafe to collect composite samples or to perform investigative monitoring where composite sampling or installation of an autosampler may not be warranted.

It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.4 Stormwater Outfall Sample Collection

Stormwater outfalls will be monitored with similar methods as discussed in **Section D-2.4.3** of this Attachment. Sampling will not be undertaken if the outfalls are not flowing or if conditions exist where the receiving water is back-flowing into the outfall. It is the combined responsibility of all members of the sampling crew to determine if the performance requirements of the specific sampling method have been met, and to collect additional samples if required. If the performance requirements outlined above or documented in sampling protocols are not met, the sample will be re-collected. If contamination of the sample container is suspected, a fresh sample container will be used. The ESGV Group will be contacted if at any time the sampling crew has questions about procedures or issues based on site-specific conditions.

D-2.4.5 Non-Stormwater Outfall Screening Surveys and Sample Collection

The outfall screening process is designed to identify outfalls that have significant non-stormwater (non-stormwater) discharges. The collection of water quality data will support the determination of significant non-stormwater discharges as well as to characterize dry weather loading.

A-1.1.1.9 *Preparation for Outfall Surveys*

Preparation for outfall surveys includes preparation of field equipment, placing bottle orders, and contacting the necessary personnel regarding site access and schedule. The following steps should be completed two weeks prior to each outfall survey:

1. Check weather reports and LACDPW rain gage to ensure that antecedent dry weather conditions are suitable.
2. Contact appropriate Flood Maintenance Division personnel from LACDPW to notify them of dates and times of any activities in flood control channels.
3. Contact laboratories to order bottles and to coordinate sample pick-ups.
4. Confirm scheduled sampling date with field crews.
5. Set-up sampling day itinerary including sample drop-offs and pick-ups.
6. Compile field equipment.
7. Prepare sample labels.
8. Prepare event summaries to indicate the type of field measurements, field observations, and samples to be taken at each of the outfalls.
9. Prepare COCs.
10. Charge the batteries of field tablets (if used).

A-1.1.1.10 *Non-Stormwater Sample Collection*

Water quality samples will be collected consistent with the dry weather requirements outlined in the receiving water monitoring section using the direct submersion, intermediate container, shallow sheet flow, or pumping methods described in **Section A-1.1.1.3** of this Attachment.

D-2.4.6 Stormborne Sediment Sampling

The Puddingstone Reservoir TMDLs and the Harbors Toxics TMDLs include requirements for the analysis of water quality samples to assess the contribution of certain organic pollutants associated with bulk sediment (**Table D-13**).

Table D-13.
Categories of Constituents for Assessing Sediment Concentrations in Water for the Puddingstone Reservoir and the Harbors Toxics TMDLs

General Category of Constituent	Harbors Toxics TMDLs	Puddingstone Reservoir TMDLs
Metals[1]	X	
DDTs[2]	X	X
Chlordanes[2]		X
Dieldrin		X
PCBs[2]	X	X
PAHs[2]	X	

1 Metals include copper, lead, silver, and zinc.
2 See **Table D-3** for a list of individual constituents in each category.

Most of the organochlorine (OC) pesticides and PCBs and many of the PAHs tend to strongly associate with sediment and organic material. These constituents commonly have octanol/water partition coefficients (log Kow) that are greater than six, elevated soil/water partition coefficients (log Kd) and elevated soil adsorption coefficients (log Koc). The lighter weight PAHs such as naphthalene, acenaphthene and acenaphthylene tend to be more soluble in water and volatile. Concentrations of OC pesticides, PCBs, and PAHs are often below or are very close to the limits of detection for conventional analytical methods used for analyzing water samples. Although collection and filtration of high volumes of stormwater will allow improved quantification of these constituents, it also introduces substantial potential for introduction of errors.

Use of filtration methods in combination with conventional analytical methods requires collection of extremely large volumes of stormwater and challenging filtration processes. Use of conventional analytical methods for analysis of the filtered sediment is then expected to require at least 5 grams of sediment (typically 10 grams is preferred by laboratories) for each of the groups of analytes (metals, OC pesticides, PCBs and PAHs) in order to achieve detection limits necessary to quantify loads. In addition, the direct impacts of filtering samples with high sediment content are not well understood. Efforts by the City of Los Angeles and Los Angeles County in the Ballona Creek and Marina del Rey watersheds, respectively, have demonstrated the challenges associated with collecting and analyzing suspended sediments. Assuming samples contain sediment at an average TSS concentration of 100 mg/L and that all sediment could be recovered, analyses might require as much as 50 liters for each test method (total of 200 liters). An ongoing special study is underway in Marina del Rey to evaluate various methods for capturing sufficient sediment to conduct analysis. In Ballona Creek, the City of Los Angeles has been successful in collecting sufficient volumes of sediment over the course of a year to conduct the analysis. This allows for the quantification of annual loading; however, it does not allow for an evaluation of concentrations and loads under various storm conditions. Although use of lower sediment volumes may be possible, both detection limits and quality control measures might be impacted. In Ballona Creek, duplicate and quality control analysis have been limited to the available sediment, resulting in situations where either certain target constituents or quality control analysis are not completed.

An alternative approach for assessing the loads of the constituents of interest will be utilized in this CIMP to substantially reduce the amount of sample needing to be handled and potential for introduction of error. This approach will utilize High Resolution Mass Spectrometry (HRMS) to analyze for OC pesticides (USEPA 1699), PCBs (USEPA 1668) and PAHs (CARB). HRMS analyses are quantified by isotope dilution techniques. Analytical performance is measured by analysis of Ongoing Precision and Recovery (OPR) analyses and labeled compound recovery. Conventional methods for analyzing for metals of interest are sufficiently sensitive to assess concentrations on suspended sediments. During the first three years, analyses will be conducted on whole water samples. These test methods provide detection limits that are roughly 100 times more sensitive than conventional analytical methods. In addition, these extremely low detection limits can be achieved with as little as 3-6 liters of stormwater.

Use of this approach is expected to greatly enhance the ability to consistently obtain appropriate samples for measuring and comparing loads of constituents of interest associated with each sampling event. This will assure that all key toxics can be quantified at levels suitable for estimation of mass loads. Due to relatively low levels of sediment in stormwater, efforts in Los Angeles County related to TMDL monitoring of suspended sediments have often led to the need to composite sediments collected over multiple storm events. The approach contained herein provides the opportunity to quantify concentrations, and therefore loads, for each stormwater sampling event.

For purposes of load calculations, it would be assumed that 100% of OC pesticides, PCBs and PAHs were associated with suspended solids. Separate analyses of TSS/SSC would be used to normalize the data. After three years (approximately four to six storm events) the data will be reevaluated to assess whether continued use of the HRMS approach remains to be beneficial. If deemed necessary, a modified approach will be evaluated for analysis of filtered suspended sediments.

A-1.1.1.11 ***Sampling and Analytical Procedures***

Stormwater samples for the Harbors Toxics TMDLs will be collected using autosamplers as described in **Section A-1.1.1.7**. Based on TSS measurements at one mass emission sites in LA County (**Table D-14**), use of a TSS concentration of 100 mg/L is expected to provide a conservative basis for estimating reporting limits for OC pesticides, PCBs, and PAHs in suspended sediments based upon 1-liter samples. However, two liters of storm water will be provided for each organic analytical suite for a total of six liters. An accurate measure of suspended sediments is critical to this sampling approach. TSS will be analyzed; however, SSC will be used as the standard for calculating the concentrations of target constituents in suspended sediments and total loads.

Since detection limits will depend upon the concentration of suspended sediment in the sample, the laboratory analyzing the suspended sediment concentrations will be asked to provide a rush analysis to provide information that can be used to direct processing of the samples for the organic compounds. If TSS/SSC are less than 150 mg/L, two liters will be extracted for subsequent HRMS analysis. If TSS concentrations are between 150 and 200 mg/L, one of the additional liter samples may be used to increase the volume of sample water for just PAHs or the additional liter may be used as a field duplicate for each analysis. If TSS concentrations are greater than 200 mg/L, the additional liter may be used as a field duplicate for each analysis. If the initial TSS sample indicates that sediment content is less than 50 mg/L, additional measures will be taken to improve PAH reporting limits with respect to suspended sediment loads. A field duplicate from one site will be analyzed if adequate sample volumes are obtained.

Target reporting limits (**Table D-15** and **Table D-16**) were established based upon bed sediment reporting limits listed in the Coordinated Compliance and Reporting Plan for the Greater Los Angeles and Long Beach Harbor Waters (Anchor QEA, 2013). **Table D-15** and **Table D-16** provide a summary of the detection limits attainable in water samples using HRMS analytical methods. Estimated detection limits are provided for concentrations of the target constituents in suspended sediments given the assumption that suspended sediment content of the water sample is 100 mg/L and that 100 percent of the target constituents are associated with the suspended sediment. This provides a conservative assumption with respect to evaluating the potential impacts of concentrations of OC pesticides, PCBs, and PAHs in suspended sediment on concentrations in bed sediment. Additionally, **Table D-15** and **Table D-16** present relevant TMDL targets and reporting limits suggested in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009). The following summarizes a comparison between the estimated detection limits for OC pesticides, PCBs, and PAHs in the suspended sediments to target reporting limits:

- For OC pesticides (**Table D-15**), estimated detection limits in the suspended sediment are at or below TMDL targets limits for bed sediments, except for dieldrin. The dieldrin estimated detection limit is above the lowest TMDL target, but not the remaining TMDL targets, and is below observed concentrations reported in the TMDL staff reports. Additionally, estimated detection limits in the suspended sediment are below target bed sediment reporting limits for this CIMP and target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009), except for dieldrin. Dieldrin is above the bed sediment reporting limit in this CIMP, but below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).

- For PCBs (**Table D-15**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Additionally, estimated detection limits in the suspended sediment are at or below target bed sediment reporting limits for this CIMP and below target reporting limits presented in the SWAMP QAPP (SWRCB, 2008) and the SQO Technical Support Manual (SCCWRP, 2009).
- For PAHs (**Table D-16**), estimated detection limits in the suspended sediment are below TMDL targets limits for bed sediments. Most individual PAH compounds would be expected to be detectable in the suspended sediment at concentrations about 2.5 times greater that the target bed sediment reporting limits for this CIMP and the target reporting limits presented in the SWAMP QAPP (SWRCB, 2008). Approximately half of the individual PAH compounds are above the target reporting limits presented in the SQO Technical Support Manual (SCCWRP, 2009), while the other half are below. Two compounds, naphthalene and phenanthrene, would have detection limits roughly 6 times the target bed sediment reporting limits for this CIMP. Naphthalene is an extremely light weight PAH that is not considered a major analyte of concern in storm water.

As noted previously, metals of interest are quantifiable with standard analytical methods. Detection limits for trace metals (**Table D-2**) are suitable for calculation of concentrations in suspended solids and the concentration of trace metals associated with the particulate fraction will be calculated as:

$$C_P = C_T - C_D$$

where C_T =Concentration of total recoverable metals

C_D =Concentration of dissolved fraction

C_P =Concentration of the particulate fraction

USEPA's guidance document for development of metals translators (EPA, 1996) uses the same approach for calculation of the trace metals in the particulate fraction.

In summary, all but one of the target reporting limits are below relevant TMDL targets and the overwhelming majority are below bed sediment reporting limits identified in this CIMP and the SWAMP QAPP (SWRCB, 2008) and SQO Technical Support Manual (SCCWRP, 2009). The approach to analyzing whole water samples to estimate concentrations of target pollutants on bed sediment provides an opportunity to improve the understanding of loads during multiple storms each year.

Table D-14.
Summary of Median TSS Measurements (mg/L)
at the San Gabriel River Mass Emission Site

Waterbody	LA County Monitoring Site ID	Median
San Gabriel River	S14	113

Table D-15.
Recommended Methods, Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for Organochlorine Pesticides and Total PCBs

Constituent and Analytical Method	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2008) Reporting Limit	SQO Technical Support Manual (2009) Reporting Limit	Harbors Toxics TMDL Sediment Target (Indirect Effects)	Harbors Toxics TMDL Sediment Target (Direct Effects)	Puddingstone Reservoir Sediment Target (Indirect Effects)
	pg/L	ng/g – dry wt						
Chlordane Compounds (EPA 1699)								
alpha-Chlordane	40	0.4	0.5	1	0.5	1.3 (Total Chlordane)	0.5 (Total Chlordane)	0.75 (Total Chlordane)
gamma-Chlordane	40	0.4	0.5	1	0.54			
Oxychlordane	40	0.4	0.5	1	NA			
trans-Nonachlor	40	0.4	0.5	1	4.6			
cis-Nonachlor	40	0.4	0.5	2	NA			
Other OC Pesticides (EPA 1699)								
2,4'-DDD	40	0.4	0.5	2	0.5	1.9 (Total DDT)	1.58 (Total DDT)	3.94 (Total DDT)
2,4'-DDE	80	0.4	0.5	2	0.5			
2,4'-DDT	80	0.4	0.5	3	0.5			
4,4'-DDD	40	0.4	0.5	2	0.5			
4,4'-DDE	80	0.4	0.5	2	0.5			
4,4'-DDT	80	0.4	0.5	5	0.5			
Total DDT	80	0.4	---	---	0.5			
Dieldrin	40	0.4	0.02	2	2.7	NA	0.02	0.22
Total PCBs (EPA 1668)	5-20	0.05-0.2	0.2	0.2	3.0	3.2	22.7	0.59

1 Water MLs based upon 1 liter of water.

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2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

3 Target is for the summed value of the individual constituents and is not specific to each constituent species.

NA Not applicable

Table D-16.
Estimated Detection Limits, Target Reporting Limits, and Relevant TMDL Targets for PAHs

Constituent	Water Detection Limit (1)	Suspended Sediment Detection Limit (2)	ESGV CIMP Target Bed Sediment Reporting Limits	SWAMP QAPP (2009) Reporting Limit	SQO Technical Support Manual Reporting Limit	Harbors Toxics TMDL Sediment Target (Direct Effects)
	pg/L	ng/g – dry wt				
1-Methylnaphthalene	5	50	20	20	20	552 (Low Weight) (3) 1700 (High Weight) (3) 4700 (Total PAHs)
1-Methylphenanthrene	5	50	20	20	20	
2-Methylnaphthalene	5	50	20	20	20	
2,6-Dimethylnaphthalene	5	50	20	20	20	
Acenaphthene	5	50	20	20	20	
Anthracene	5	50	20	20	20	
Benzo(a)anthracene	5	50	20	20	80	
Benzo(a)pyrene	5	50	20	20	80	
Benzo(e)pyrene	5	50	20	20	80	
Biphenyl	5	50	20	20	20	
Chrysene	5	50	20	20	80	
Dibenz(a,h)anthracene	5	50	20	20	80	
Fluoranthene	5	50	20	20	80	
Fluorene	5	50	20	20	20	
Naphthalene	12.5	125	20	20	20	
Perylene	5	50	20	20	80	
Phenanthrene	12.5	125	20	20	20	
Pyrene	5	50	20	20	80	

1 Water MLs based upon 1 liter of water and CARB 429m. Detection limits are based upon a final extract of 500 µL. If the SSC is low, either an additional liter of water can be extracted to halve the detection limit or the final extract volume can be reduced. Depending on sample characteristics, the extract volume can be reduced to as little as 50-100 µL which would drop MLs by a factor of 0.1 to 0.2 times the listed ML.

2 Suspended Sediment MLs based upon estimate of 100 mg/L suspended solids.

2 *Low Molecular Weight PAHs* Low weight PAHs include Acenaphthene, Anthracene, Phenanthrene, Biphenyl, Naphthalene, 2,6-dimethylnaphthalene, Fluorene, 1-methylnaphthalene, 2-methylnaphthalene, 1-methylphenanthrene, *High Molecular Weight PAHs:* Benzo(a)anthracene, Benzo(a)pyrene, Benzo(e)pyrene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Perylene, Pyrene.

NA Not applicable

D-3 Quality Control Sample Collection

Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. Detailed descriptions of quality control samples are presented in **Section D-3.1** of this Attachment.

D-3.1 Quality Assurance/Quality Control

This section describes the quality assurance and quality control requirements and processes. Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. There are no requirements for quality control for field analysis of general parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and pH) outlined in SWAMP guidance documents. However, field crews will be required to calibrate equipment as outlined in **Section D-2** of this Attachment. **Table D-17** presents the quality assurance parameter addressed by each quality assurance requirement as well as the appropriate corrective action if the acceptance limit is exceeded.

Table D-17.
Quality Control Requirements

Quality Control Sample Type	QA Parameter	Frequency[1]	Acceptance Limits	Corrective Action
Quality Control Requirements – Field				
Equipment Blanks	Contamination	5% of all samples[2]	< MDL	Identify equipment contamination source. Qualify data as needed.
Field Blank	Contamination	5% of all samples	< MDL	Examine field log. Identify contamination source. Qualify data as needed.
Field Duplicate	Precision	5% of all samples	RPD < 25% if |Difference| > RL	Reanalyze both samples if possible. Identify variability source. Qualify data as needed.
Quality Control Requirements – Laboratory				
Method Blank	Contamination	1 per analytical batch	< MDL	Identify contamination source. Reanalyze method blank and all samples in batch. Qualify data as needed.
Lab Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Recalibrate and reanalyze.
Matrix Spike	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides [3]	Check LCS/CRM recovery. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Matrix Spike Duplicate	Precision	1 per analytical batch	RPD < 30% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Laboratory Control Sample (or CRM or Blank Spike)	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides [3]	Recalibrate and reanalyze LCS/ CRM and samples.
Blank Spike Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Surrogate Spike (Organics Only)	Accuracy	Each environmental and lab QC sample	30-150% Recovery3	Check surrogate recovery in LCS. Attempt to correct matrix problem and reanalyze sample. Qualify data as needed.

MDL = Method Detection Limit RL = Reporting Limit RPD = Relative Percent Difference
LCS = Laboratory Control Sample/Standard CRM = Certified/ Standard Reference Material

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GWQC = General Water Quality Constituents

1. "Analytical batch" refers to a number of samples (not to exceed 20 environmental samples plus the associated quality control samples) that are similar in matrix type and processed/prepared together under the same conditions and same reagents (equivalent to preparation batch).

3. Equipment blanks will be collected by the field crew before using the equipment to collect sample.
4. Or control limits set at + 3 standard deviations based on actual laboratory data.

D-3.2 QA/QC Requirements and Objectives

D-3.2.1 Comparability

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. For this monitoring program, this objective will be ensured mainly through use of standardized procedures for field measurements, sample collection, sample preparation, laboratory analysis, and site selection; adherence to quality assurance protocols and holding times; and reporting in standard units. Additionally, comparability of analytical data will be addressed through the use of standard operating procedures and extensive analyst training at the analyzing laboratory.

D-3.2.2 Representativeness

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. For the CIMP, this objective will be addressed by the overall design of the program. Representativeness is attained through the selection of sampling locations, methods, and frequencies for each parameter of interest, and by maintaining the integrity of each sample after collection. Sampling locations were chosen that are representative of various areas within the watershed and discharges from the MS4, which will allow for the characterization of the watershed and impacts MS4 discharges may have on water quality.

D-3.2.3 Completeness

Data completeness is a measure of the amount of successfully collected and validated data relative to the amount of data planned to be collected for the project. It is usually expressed as a percentage value. A project objective for percent completeness is typically based on the percentage of the data needed for the program or study to reach valid conclusions.

Because the CIMP is intended to be a long term monitoring program, data that are not successfully collected during a specific sample event will not be recollected at a later date. Rather subsequent events conducted over the course of the monitoring will provide robust data sets to appropriately characterize conditions at individual sampling sites and the watershed in general. For this reason, most of the data planned for collection cannot be considered absolutely critical, and it is difficult to set a meaningful objective for data completeness.

However, some reasonable objectives for data are desirable, if only to measure the effectiveness of the program when conditions allow for the collection of samples (i.e., flow is present). The program goals for data completeness, shown in **Table D-4**, are based on the planned sampling frequency, SWAMP recommendations, and a subjective determination of the relative importance of the monitoring element within the CIMP. If, however, sampling sites do not allow for the collection of enough samples to provide representative data due to conditions (i.e., no flow) alternate sites will be considered. Data completeness will be evaluated on a yearly basis.

D-3.3 QA/QC Field Procedures

Quality control samples to be prepared in the field will consist of equipment blanks, field blanks, and field duplicates as described below.

D-3.3.1 Equipment Blanks

The purpose of analyzing equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment and analyzed for relevant pollutants before sending the equipment to the field crew. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The equipment blanks will be analyzed using the same analytical methods specified for environmental samples. If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

D-3.3.2 Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Per the Quality Assurance Management Plan for SWAMP (SWRCB, 2008) field blanks are to be collected as follows:

- At a frequency of 5% of samples collected for the following constituents: trace metals in water (including mercury), VOC samples in water and sediment, DOC samples in water, and bacteria samples.
- Field blanks for other media and analytes should be conducted upon initiation of sampling, and if field blank performance is acceptable (as described in **Table D-17**), further collection and analysis of field blanks for these other media and analytes need only be performed on an as-needed basis, or during field performance audits. An as-needed basis for the ESGV CIMP will be annually.

Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples.

If any analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.3.3 Field Duplicates

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples, and analyzed along with the associated environmental samples. Field duplicates will consist of two grab samples collected simultaneously, to the extent practicable. If the Relative Percent Difference (RPD) of field duplicate results is greater than the percentage stated in **Table D-17** and the absolute difference is greater than the RL, both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures taken prior to the next sampling event.

D-3.4 QA/QC Laboratory Analyses

Quality control samples prepared in the laboratory will consist of method blanks, laboratory duplicates, matrix spikes/duplicates, laboratory control samples (standard reference materials), and toxicity quality controls.

D-3.4.1 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be corrected, and the associated samples should be reanalyzed.

D-3.4.2 Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of duplicate laboratory fortified method blanks. If the RPD for any analyte is greater than the percentage stated in **Table D-17** and the absolute difference between duplicates is greater than the RL, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and laboratory duplicates should be reanalyzed.

D-3.4.3 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

D-3.4.4 Laboratory Control Samples

The purpose of analyzing laboratory control samples (or a standard reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory fortified method blanks or a standard reference material. If recovery of any analyte is outside the acceptable range, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and the laboratory control sample should be reanalyzed.

D-3.4.5 Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated or isotopically labeled compounds that are not usually present in environmental media. Results are expressed as percent recovery of the surrogate spike. Surrogate spikes are applicable for analysis of PCBs and pesticides.

D-3.4.6 Toxicity Quality Control

For aquatic toxicity tests, the acceptability of test results is determined primarily by performance-based criteria for test organisms, culture and test conditions, and the results of

control bioassays. Control bioassays include monthly reference toxicant testing. Test acceptability requirements are documented in the method documents for each bioassay method.

D-4 Instrument/Equipment Calibration and Frequency

Frequencies and procedures for calibration of analytical equipment used by each contract laboratory are documented in the QA Manual for each laboratory. Any deficiencies in analytical equipment calibration should be managed in accordance with the QA Manual for each contract laboratory. Any deficiencies that affect analysis of samples submitted through this program must be reported to the ESGV Group. Laboratory QA Manuals are available for review at the analyzing laboratory.

D-5 Data Management

Section D-5 details the procedures for managing and reporting data meet the goals and objectives of the CIMP and in turn the Permit. The details contained herein serve as a guide for ensuring that consistent protocols and procedures are in place for successful data management and reporting.

D-5.1 Data Review, Verification, and Validation Requirements

The acceptability of data is determined through data verification and data validation. Both processes are discussed in detail below. In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the contract laboratory’s QA Manual will be used to accept, reject, or qualify the data generated by the laboratory. Each laboratory’s QA Officer will be responsible for validating data generated by the laboratory.

Once analytical results are received from the analyzing laboratory, the ESGV Group will perform an independent review and validation of analytical results. Appendix 2 provides equations that are used to calculate precision, accuracy, and completeness of the data. Decisions to reject or qualify data will be made by the ESGV Group, based on the evaluation of field and laboratory quality control data, according to procedures outlined in Section 13 of Caltrans document No. CTSW-RT-00-005, Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition (LWA, 2000). Section 13 of the Caltrans Guidance Manual is included as Appendix 3.

D-5.1.1 Data Verification

Data verification involves verifying that required methods and procedures have been followed at all stages of the data collection process, including sample collection, sample receipt, sample preparation, sample analysis, and documentation review for completeness. Verified data have been checked for a variety of factors, including transcription errors, correct application of dilution factors, appropriate reporting of dry weight versus wet weight results, and correct

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application of conversion factors. Verification of data may also include laboratory qualifiers, if assigned.

Data verification should occur in the field and the laboratory at each level (i.e., all personnel should verify their own work) and as information is passed from one level to the next (i.e., supervisors should verify the information produced by their staff). Records commonly examined during the verification process include field and sample collection logs, COC forms, sample preparation logs, instrument logs, raw data, and calculation worksheets.

In addition, laboratory personnel will verify that the measurement process was "in control" (i.e., all specified data quality objectives were met or acceptable deviations explained) for each batch of samples before proceeding with the analysis of a subsequent batch. Each laboratory will also establish a system for detecting and reducing transcription and/or calculation errors prior to reporting data.

D-5.1.2 Data Validation

In general, data validation involves identifying project requirements, obtaining the documents and records produced during data verification, evaluating the quality of the data generated, and determining whether project requirements were met. The main focus of data validation is determining data quality in terms of accomplishment of measurement quality objectives (i.e., meeting QC acceptance criteria). Data quality indicators, such as precision, accuracy, sensitivity, representativeness, and completeness, are typically used as expressions of data quality. The ESGV Group, will review verified sample results for the data set as a whole, including laboratory qualifiers, summarize data and QC deficiencies and evaluate the impact on overall data quality, assign data validation qualifiers as necessary, and prepare an analytical data validation report. The validation process applies to both field and laboratory data.

In addition to the data quality objectives presented in **Table D-4**, the standard data validation procedures documented in the analyzing laboratory’s QA Manual will be used to accept, reject, or qualify the data generated. The laboratory will only submit data that have met data quality objectives, or data that have acceptable deviations explained. When QC requirements have not been met, the samples will be reanalyzed when possible, and only the results of the reanalysis will be submitted, provided that they are acceptable. Each laboratory’s QA Officer is responsible for validating the data it generates.

D-5.1.3 Data Management

Analytical Data Reports will be sent to and kept by the ESGV Group. Each type of report will be stored separately and ordered chronologically. The field crew shall retain the original field logs. The contract laboratory shall retain original COC forms. The contract laboratory will retain copies of the preliminary and final data reports. Concentrations of all parameters will be

calculated as described in the laboratory SOPs or referenced method document for each analyte or parameter.

The field log and analytical data generated will be converted to a standard database format maintained on personal computers. After data entry or data transfer procedures are completed for each sample event, data will be validated. After the final quality assurance checks for errors are completed, the data will be added to the final database.

D-6 Reporting

The MRP includes a number of reporting requirements to summarize CIMP implementation efforts, the data collected as part of the CIMP, as well as to report on implementation of the Permit requirements as a whole. The following sections detail monitoring and reporting requirements outlined in the MRP and provides information on how the water, sediment, and tissue data collected as part of this CIMP data are to be used.

D-6.1 Semi-Annual Analytical Data Reports

As required by Part XIV.L of the MRP, results from each of the receiving water or outfall based monitoring stations conducted in accordance with the SOP shall be sent electronically to the Regional Board's Stormwater site at MS4stormwaterRB4@waterboards.ca.gov. The monitoring results will be submitted on a semi-annual basis and will highlight exceedances applicable to WQBELs, RWLs, action levels, or aquatic toxicity thresholds. Corresponding sample dates and monitoring locations will be included. Data will be transmitted in the most recent Southern California SMC's Standardized Data Transfer Formats. Reports of monitoring activities will include, at a minimum, the following information (records of which are required by Part XIV.A.1.c of the MRP):

1. The date, time of sampling or measurements, exact place, weather conditions, and rain fall amount.
2. The individual(s) who performed the sampling or measurements.
3. The date(s) analyses were performed.
4. The individual(s) who performed the analyses.
5. The analytical techniques or methods used.
6. The results of such analyses.
7. The data sheets showing toxicity test results.

D-6.2 Annual Monitoring Reports

As outlined in Part XVI.A of the MRP, the annual reporting process is intended to provide the Regional Board with summary information to allow for the assessment of the Permittee's:

1. Participation in one or more Watershed Management Programs.
2. Impact of each Permittee(s) stormwater and non-stormwater discharges on the receiving water.
3. Each permittee's compliance with RWLs, numeric WQBELs, and non-stormwater action levels.
4. The effectiveness of each Permittee(s) control measures in reducing discharges of pollutants from the MS4 to receiving waters.
5. Whether the quality of MS4 discharges and the health of receiving waters is improving, staying the same, or declining as a result of watershed management program efforts, and/or TMDL implementation measures, or other MCMs.
6. Whether changes in water quality can be attributed to pollutant controls imposed on new development, re-development, or retrofit projects.

The annual report process also seeks to provide a forum for Permittee(s) to discuss the effectiveness of its past and ongoing control measure efforts and to convey its plans for future control measures. Detailed data and information will also be provided in a clear and transparent fashion to allow the Regional Board and the general public to review and verify conclusions presented by the Permittee. Annual reports shall be organized to include the information as described in the following subsections.

D-6.3 Watershed Summary Information

According to Section XVII.B of the MRP, Permittees shall include the information requested in MRP Section XVII.B parts A.1 through A.3 in its odd year Annual Report (e.g., Year 1, 3, 5). The requested information shall be provided for each watershed within the Permittee's jurisdiction. Alternatively, Permittees participating in a WMP may provide the requested information through the development and submission of a WMP plan and any updates. As the ULARWMG is submitting an WMP the information is not required as a separate submittal. However, updates to information requested in Section XVII.B parts A.1 through A.3 (presented in **Sections D-6.3.1** through **D-6.3.3** below) will be noted in WMP plan updates.

D-6.3.1 Watershed Management Area

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for baseline information regarding the following watershed management area details:

1. The effective TMDLs, applicable WQBELs and RWLs, and implementation and reporting requirements, and compliance dates.
2. CWA section 303(d) listings of impaired waters not addressed by TMDLs.
3. Results of regional bioassessment monitoring.

4. A description of known hydromodificaitons to receiving waters and a description, including locations, of natural drainage systems.

5. Description of groundwater recharge areas including number and acres.

6. Maps and/or aerial photographs identifying the location of Environmentally Sensitive Areas (ESAs), Areas of Special Biological Significance (ASBS), natural drainage systems, and groundwater recharge areas.

D-6.3.2 Subwatershed (HUC-12) Descriptions

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the following Subwatershed (twelve digit Hydrologic Unit Code or HUC-12) descriptions:

1. Description including HUC-12 number, name and a list of all tributaries named in the Basin Plan.

2. Land use map of the HUC-12 watershed.

3. 85th percentile, 24-hour rainfall isohyetal map for the subwatershed.

4. One-year, one-hour storm intensity isohyetal map for the subwatershed.

5. MS4 map for the subwatershed, including major MS4 ourfalls and all low-flow diversions.

D-6.3.3 Description of Permittee(s) Drainage Area within the Subwatershed

When a Permittee has collaboratively developed an WMP, reference to the WMP and any revisions to the WMP may suffice for information regarding the Drainage Area within the subwatershed:

1. A subwatershed map depicting the Permittee(s) jurisdictional area and the MS4, including major outfalls (with identification numbers), and low flow diversions located within the Permittee(s) jurisdictional area.

2. Provide the estimated baseline percent of effective impervious area (EIA) within the Permitte(s) jurisdictional area.

D-6.3.4 Annual Assessment and Reporting

The following sections will be included in the ULARWMA Annual Report to meet the MRP requirements. The Annual Report will clearly identify all data collected and strategies, control measures, and assessments implemented by each Permittee within the ULARWMA, as well as those implemented by multiple Permittees on a watershed scale.

Stormwater Control Measures

All reasonable efforts will be made to determine, compile, analyze, and summarize the following information for each Permittee:

1. Estimated cumulative change in percent EIA since the effective date of the Order, and if possible, the estimated change in the stormwater runoff volume during the 85th percentile storm event.

2. Summary of New Development/Re-Development Projects constructed within the Permittee(s) jurisdictional area during the reporting year.

3. Summary of Retrofit Projects that reduced or disconnected impervious area from MS4 during the reporting year.

4. Summary of other projects designed to intercept stormwater runoff prior to discharge to the MS4 during the reporting year.

5. Estimate the total runoff volume retained on site by the implementation of such projects during the reporting year.

6. Summary of actions taken in compliance with TMDL implementation plans or approved WMP to implement TMDL provisions.

7. Summary of riparian buffer/wetland restoration projects completed during the reporting year. For riparian buffers include width, length and vegetation type; for wetland include acres restored, enhanced, or created.

8. Summary of other MCMs implemented during the reporting year, as the Permittee deems relevant.

9. Status of all multi-year efforts that were not completed in the current year and will therefore continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee(s) will provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

Effectiveness Assessment of Stormwater Control Measures

The following information will be included to detail Stormwater Control Measures during the reporting year:

1. Rainfall summary for the reporting year, including the number of storm events, highest volume event (inches/24 hours), highest number of consecutive days with measurable rainfall, total rainfall during the reporting year compared to average annual rainfall for the WMP area.

2. A summary table describing rainfall during stormwater outfall and wet-weather receiving water monitoring events. The summary description will include the date, time that the storm commenced and the storm duration in hours, the highest 15-minute recorded storm intensity (converted to inches/hour), the total storm volume (inches), and the time between the storm event sampled and the end of the previous storm event.

3. Where control measures were designed to reduce impervious cover or stormwater peak flow and flow duration, hydrographs or flow data of pre- and post-control activity for the 85th percentile, 24-hour rain event, if available.

4. For natural drainage systems, a reference watershed flow duration curve and comparison to a

flow duration curve for the WMP area under current conditions.

5. An assessment as to whether the quality of stormwater discharges as measured at designed outfalls is improving, staying the same, or declining. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, or other means may be used to develop and support the assessment's conclusions.

6. An assessment as to whether wet-weather receiving water quality is improving, staying the same or declining, when normalized for variations in rainfall patterns. Water quality data may be compared from the reporting year to previous years with similar rainfall patterns, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.

7. Status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factors(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Non-stormwater Water Control Measures

The following information will be included to detail non-stormwater control measures:

1. An estimation of the number of major outfalls within the WMP area.

2. The number of outfalls that were screened for significant non-stormwater discharges during the reporting year.

3. The cumulative number of outfalls that have been screened for significant non-stormwater discharges since the date the Permit was adopted through the reporting year.

4. The number of outfalls with confirmed significant non-stormwater discharge.

5. The number of outfalls where significant non-stormwater discharge was attributed to other NPDES permitted discharges; other authorized non-stormwater discharges; or conditionally exempt discharges.

6. The number of outfalls where significant non-stormwater discharges were abated as a result of the WMP Group actions.

7. The number of outfalls where non-stormwater discharges was monitored.

8. The status of all multi-year efforts, including TMDL implementation, which were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts will be provided.

Effectiveness Assessment of Non-Stormwater Control Measures

The following information will be included to assess non-stormwater control measures effectiveness:

1. An assessment as to whether receiving water quality within the WMP area is impaired, improving, staying the same or declining during the dry-weather conditions. Water quality data from the reporting year to previous years with similar dry-weather flows may be compared, a trends analysis may be conducted, regional bioassessment studies may be drawn from, or other means may be used to develop and support the assessment's conclusions.

2. An assessment of the effectiveness of the control measures in effectively prohibiting non-stormwater discharges through the MS4 to the receiving water.

3. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Integrated Monitoring Compliance Report

The following information will be included to assess the Permittee(s) compliance with applicable TMDLs, WQBELs, RWLs, and action levels:

1. An Integrated Monitoring Report that summarizes all identified exceedances of the following against applicable RWLs, WQBELs, non-stormwater action levels, and aquatic toxicity thresholds:

    a. Outfall-based stormwater monitoring data

    b. Wet weather receiving water monitoring data

    c. Dry weather receiving water data

    d. NSW outfall monitoring data

    All sample results that exceeded one more applicable thresholds shall be readily identified.

2. If aquatic toxicity was confirmed and a TIE was conducted, the toxic chemicals, as determined by the TIE, will be identified. All relevant data to allow the Regional Board to review the adequacy and findings of the TIE will be included. This shall include, but not be limited to:

    a. The sample(s) date

    b. Sample(s) start and end time

    c. Sample type(s)

    d. Sample location(s) as depicted on a map

    e. The parameters, analytical results, and applicable limitation.

3. A description of efforts that were taken to mitigate and/or eliminate all non-stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.

4. A description of efforts that were taken to address stormwater discharges that exceeded one or more applicable WQBELs, or caused or contributed to Aquatic Toxicity.

5. Where RWLs were exceeded, provide a description of efforts that were taken to determine whether discharges from the MS4 caused or contributed to the exceedances and all efforts that

were taken to control the discharge of pollutants from the MS4 to those receiving waters in response to the exceedances.

Adaptive Management Strategies

The following information will be included to outline Adaptive Management Strategies:

1. The most effective control measures, why the measures were effective, and how other measures will be optimized based on past experiences.
2. The least effective control measures, why the measures were deemed ineffective, and how the controls measures will be modified or terminated.
3. Significant changes to control measures during the prior year and the rationale for the changes.
4. All significant changes to control measures anticipated to be made next year and rationale for the changes. Those changes requiring approval of the Regional Board or its Executive Officer will be clearly identified at the beginning of the Annual Report.
5. A detailed description of control measures to be applied to New Development or Re-development projects disturbing more than 50 acres.
6. The status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).

Supporting Data and Information

All monitoring data and associated meta-data used to prepare the Annual Report will be summarized in an MS Excel© spreadsheet and sorted by monitoring station/outfall identifier linked to the WMP area map. The data summary will include the date, sample type (flow-weighted composite, grab, field measurement), sample start and stop times, parameter, analytical method, value, and units. The date field will be linked to a database summarizing the weather data for the sampling date including 24-hour rainfall, rainfall intensity, and days since the previous rain event.

D-6.4 Signatory and Certification Requirements

All applications, reports, or information submitted to the Regional Board, State Board, and/or USEPA will be signed and certified as follows:

1. All applications submitted to the Regional Board shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer includes: (i) the chief executive officer of the agency (e.g., Mayor), or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., City Manager, Director of Public Works, City Engineer, etc.).
2. All reports required by the Permit and other information requested by the Regional Board, State Board, or USEPA shall be signed by either a principal executive officer or ranking elected official or by a duly authorized representative of a principal executive officer or ranking elected official. A

person is a duly authorized representative only if:

a. The authorization is made in writing by a principal executive officer or ranking elected official.

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

c. The written authorization is submitted to the Regional Board.

3. If an authorization of a duly authorized representative is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization will be submitted to the Regional Board prior to or together with any reports, information, or applications, to be signed by an authorized representative.

4. The following certification will be made by any person signing an application or report:

"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."

D-6.5 Use of Submitted Data

As stated in Part II.A.2 of the MRP, a Primary Objective of the Monitoring Program is to assess compliance with RWLs and WQBELs established to implement TMDL wet weather and dry weather wasteload allocations WLAs. As such, a discussion of how the compliance evaluation will be conducted is warranted and is presented below.

D-6.5.1 Compliance Evaluation

The compliance evaluation will take into consideration the relationship between the types of monitoring and the pathways for determining compliance outlined in the Permit. For example, the receiving water monitoring sites meet the MRP objectives and support an understanding of potential impacts associated with MS4 discharges. However, as described in the MRP (Part II.E.1), receiving water sites are intended to assess receiving water conditions. An exceedance of a RWL at a receiving water site does not on its own indicate MS4 discharges caused or contributed to the RWL exceedance. As the receiving water sites also receive runoff from non-MS4 sources, including open space and other permitted discharges, the exceedance of a RWL may have been caused or contributed to by a non-MS4 source. Additionally, an exceedance at an outfall location when the corresponding downstream receiving water location is in compliance with the water quality objectives and RWLs does not constitute an exceedance of a WQBEL.

Finally, reporting of compliance will be accomplished by evaluating the data, in addition to the status of WMP implementation consistent with the Permit (Parts VI.C.2, VI.C.3 and VI.E.2). Generally, reporting of compliance will consider whether the following conditions, as applicable, are met:

1. There are no violations of the effective WQBEL (i.e., interim or final) for the specific pollutant at the Permittee's applicable MS4 outfall(s).
2. There are no exceedances of an applicable RWLs for the specific pollutant in the receiving water(s) at, or downstream of, the Permittee's outfall(s).
3. There is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the time period subject to the WQBEL and/or RWL for the pollutant(s) associated with a specific TMDL.
4. In drainage areas where Permittees are implementing an WMP, (i) all non-stormwater and (ii) all stormwater runoff up to and including the volume equivalent to the 85th percentile, 24-hour event is retained for the drainage area tributary to the applicable receiving water.
5. The approved ULARWMG WMP is being implemented pursuant to Part VI.C of the Permit.
6. Conditions of effective Time Schedule Orders (TSOs) are met.
7. Exceedances of RWLs not otherwise addressed by a TMDL are addressed pursuant to Part VI.C.2 of the Permit.

In addition, evaluation of compliance for pollutants subject to TMDLs will consider the requirements specified in the applicable TMDLs described in the following subsections.

SGR Metals TMDL Interim Milestones Compliance Determination

Per the Metals TMDL, the WMP Group is required to show increasing percentages of the total watershed meeting dry and wet weather WLAs phased over a 12-year period. Table D-18 lists the compliance milestone dates as well as the required percent compliance for the total watershed. The percent compliance for the WMP Group will be calculated using an annual average. The annual average will be determined by averaging the total percentage for all of the sampling events occurring during an individual year to adequately characterize the dry or wet weather conditions for the reporting period.

Table D-18.
Compliance Milestone Dates and Required Percent Compliance

Compliance Milestone Date	Dry Weather Percent of Total Drainage Area Served by MS4 Meeting WLA	Wet Weather Percent of Total Drainage Area Served by MS4 Meeting WLA
September 30, 2017	30%	10%
September 30, 2020	70%	35%
September 30, 2023	100%	65%
September 30, 2026	100%	100%

Use of Specie-Specific Data for Chlordanes, PCBs, and PAHs

Chlordanes, PCBs, and PAHs are unique in that they are pollutant categories which may be analyzed for the species that make up the pollutant category and the species of interest varies depending on the purpose of data collection. The individual constituents are summed to determine "total" concentrations. The following describes how individual chlordane, PCB, and PAH species will be summed for comparison to applicable WQBELs, RWLs, TMDL targets, WLAs, and/or State adopted objectives.

Analysis included in this CIMP for chlordane includes the following species: alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor. The calculation of total chlordane will be conducted as follows:

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of alpha-chlordane, gamma-chlordane, trans-Nonachlor will be summed.
- When evaluating sediment concentrations and loads and tissue concentrations associated with indirect effects, quantified concentrations of alpha-chlordane, gamma-chlordane, oxychlordane, cis-Nonachlor, and trans-Nonachlor will be summed.
- Upon approval by the State Board, for the purposes of conducting analyses associated with the Decision Support Tool (DST) for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PCBs includes the following species: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 and congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153,

156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209. The calculation of total PCBs will be conducted as follows:

- When evaluating water concentrations for the purposes of comparing to the California Toxics Rule (CTR) aquatic life criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 will be summed.

- When evaluating water concentrations for the purposes of comparing to the CTR human health criteria, quantified concentrations of aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 or congeners 8, 18, 28, 31, 33, 37, 44, 49, 52, 56, 60, 66, 70, 74, 77, 81, 87, 95, 97, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 132, 138, 141, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 201, 203, 206, and 209 will be summed.

- When evaluating sediment concentrations and loads associated with the direct effects California Sediment Quality Objectives, quantified concentrations of congeners 8,18, 28, 44, 52, 66, 101, 105, 118, 128, 138, 153, 170, 180, 187, 189, 195, 206, and 209 will be summed.

- When evaluating sediment and tissue samples associated with indirect effects, quantified concentrations of congeners 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206 will be summed

- Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Analysis included in this CIMP for PAHs includes the following constituents: Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene. The calculation of total PAHs will be conducted as follows:

- When evaluating sediment and tissue samples associated with direct and indirect effects, quantified concentrations of Benzo(a)pyrene, 3,4 Benzofluoranthene, Benzo(k)flouranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene will be summed.

Upon approval by the State Board, for the purposes of conducting analyses associated with the DST for determining impairment due to indirect effects associated with sediment concentrations, data for each species will be utilized in a manner consistent with the supporting documentation.

Attachment D

Appendix 1
Example Field and Chain-of-Custody Forms

EXAMPLE Field Log

Page 1 of 2

GENERAL INFORMATION Date: __________

Site ID: ________________________________ Sampling Personnel: _______________________

GPS Coordinates: (lat) ___________________ (lon) _______________________ Picture/Video #: __________

OBSERVATIONS

Weather:____

Water Color:____________________________ In stream Activity:______________________________

Water Characteristics (flow type, odor, turbidity, floatables):____

Other comments (trash, wildlife, recreational uses, homeless activity, etc. – Use notes section if more room is needed):

____

***In situ* WATER QUALITY MEASUREMENTS**

Time	Temp (^{0}C)	pH	D.O. (mg/L)	D.O. % Sat	Elec Cond. (uS/cm)

COLLECTED WATER QUALITY SAMPLES

Sample ID	Analysis	Time	Volume	Notes
				Field blank
				Field duplicate

ADDITIONAL WATER QUALITY SAMPLING NOTES:

Example Field Log

FLOW MEASUREMENTS WITH VELOCITY METER

Estimated Total Width of Flowing Water (ft): ____________ Distance measured from (circle): RIGHT or LEFT

Measurement Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Distance from Bank (ft)														
Depth (ft)														
Velocity (ft/s)														

FLOW MEASUREMENTS WITH FLOAT AND STOPWATCH Number of Flow Paths:______

Fill out Path #	Path#	Path#	Path#	Path#	Path#
Width of Flow at **Top** of Marked Section:					
Width of Flow at **Middle** of Marked Section:					
Width of Flow at **Bottom** of Marked Section:					
Depth of Flow at 0% of **Top** Marked Section:					
Depth of Flow at 25% of **Top** Marked Section:					
Depth of Flow at 50% of **Top** Marked Section:					
Depth of Flow at 75% of **Top** Marked Section:					
Depth of Flow at 100% of **Top** Marked Section:					
Depth of Flow at 0% of **Middle** Marked Section:					
Depth of Flow at 25% of **Middle** Marked Section:					
Depth of Flow at 50% of **Middle** Marked Section:					
Depth of Flow at 75% of **Middle** Marked Section:					
Depth of Flow at 100% of **Middle** Marked Section:					
Depth of Flow at 0% of **Bottom** Marked Section					
Depth of Flow at 25% of **Bottom** Marked Section:					
Depth of Flow at 50% of **Bottom** Marked Section:					
Depth of Flow at 75% of **Bottom** Marked Section:					
Depth of Flow at 100% of **Bottom** Marked Section					
Distance Marked-off for Velocity:					
Time 1:					
Time 2:					
Time 3:					

Specify if measurements are in inches or feet using "in" or "ft"

FLOW MEASUREMENT WITH GRADUATED CONTAINER

Container Volume:______________ Percent Capture:________________

Time to fill container:

	Minutes	Seconds
Time1		
Time2		
Time3		

ADDITIONAL FLOW MEASUREMENT NOTES:

Example Chain-of-Custody Form

CHAIN-OF-CUSTODY RECORD Date: Lab ID:

Destination Lab:

Address:

Phone:

Fax:

Sampled By:

Contact:

Project:

Client Sample Id	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.											Notes

Sender Comments:	Relinquished By (1):		Relinquished By (2):	
	Signature:			
	Print:			
	Organization:			
	Date:	Time:	Date:	Time:
Laboratory Comments:	**Received By (1):**		**Received By (2):**	
	Signature:			
	Print:			
	Organization:			
	Date:	Time:	Date:	Time:

Crew:

Attachment D

Appendix 2
Chapter 13 QA/QC Data Evaluation from Caltrans Guidance Manual: Stormwater Monitoring Protocols, 2nd Edition

SECTION 13
QA/QC DATA EVALUATION

All data reported by the analytical laboratory must be carefully reviewed to determine whether the project's data quality acceptability limits or objectives (DQOs) have been met. This section describes a process for evaluation of all laboratory data, including the results of all QA/QC sample analysis.

Before any results are reported by the laboratory, the deliverable requirements should be clearly communicated to the laboratory, as described in the "Laboratory Data Package Deliverables" discussion in ***Section 12***.

The current section discusses QA/QC data evaluation in the following two parts:

KEY TOPICS

- **Initial Data Quality Screening**
- **Data Quality Evaluation**

The initial data quality screening identifies problems with laboratory reporting while they may still be corrected. When the data reports are received, they should be immediately checked for conformity to chain of custody requests to ensure that all requested analyses have been reported. The data are then evaluated for conformity to holding time requirements, conformity to reporting limit requests, analytical precision, analytical accuracy, and possible contamination during sampling and analysis. The data evaluation results in rejection, qualification, and narrative discussion of data points or the data as a whole. Qualification of data, other than rejection, does not necessary exclude use of the data for all applications. It is the decision of the data user, based on specifics of the data application, whether or not to include qualified data points.

➢ INITIAL DATA QUALITY SCREENING

The initial screening process identifies and corrects, when possible, inadvertent documentation or process errors introduced by the field crew or the laboratory. The initial data quality control screening should be applied using the following three-step process:

1. *Verification check between sampling and analysis plan (SAP), chain of custody forms, and laboratory data reports*: Chain of custody records should be compared with field logbooks and laboratory data reports to verify the accuracy of all sample identification and to ensure that all samples submitted for analysis have a value reported for each parameter requested. Any deviation from the SAP that has not yet

been documented in the field notes or project records should be recorded and corrected if possible.

Sample representativeness should also be assessed in this step. The minimum acceptable storm capture parameters (number of aliquots and percent storm capture) per amount of rainfall are specified in ***Section 10***. Samples not meeting these criteria are generally not analyzed; however, selected analyses can be run at the Caltrans task manager's discretion. If samples not meeting the minimum sample representativeness criteria are analyzed, the resulting data should be rejected ("R") or qualified as estimated ("J"), depending upon whether the analyses were approved by Caltrans. Grab samples should be taken according to the timing protocols specified in the SAP. Deviations from the protocols will result in the rejection of the data for these samples or qualification of the data as estimated. The decision to reject a sample based on sample representativeness should be made prior to the submission of the sample to the laboratory, to avoid unnecessary analytical costs.

2. *Check of laboratory data report completeness*: As discussed in ***Section 12***, the end product of the laboratory analysis is a data report that should include a number of QA/QC results along with the environmental results. QA/QC sample results reported by the lab should include both analyses requested by the field crew (field blanks, field duplicates, lab duplicates and MS/MSD analysis), as well as internal laboratory QA/QC results (method blanks and laboratory control samples).

There are often differences among laboratories in terms of style and format of reporting. Therefore, it is prudent to request in advance that the laboratory conform to the style and format approved by Caltrans as shown in ***Section 14***. The Caltrans data reviewer should verify that the laboratory data package includes the following items:

- ✓ A narrative which outlines any problems, corrections, anomalies, and conclusions.
- ✓ Sample identification numbers.
- ✓ Sample extraction and analysis dates.
- ✓ Reporting limits for all analyses reported.
- ✓ Results of method blanks.
- ✓ Results of matrix spike and matrix spike duplicate analyses, including calculation of percent recovered and relative percent differences.
- ✓ Results of laboratory control sample analyses.
- ✓ Results of external reference standard analyses.
- ✓ Surrogate spike and blank spike analysis results for organic constituents.

✓ A summary of acceptable QA/QC criteria (RPD, spike recovery) used by the laboratory.

Items missing from this list should be requested from the laboratory.

3. *Check for typographical errors and apparent incongruities*: The laboratory reports should be reviewed to identify results that are outside the range of normally observed values. Any type of suspect result or apparent typographical error should be verified with the laboratory. An example of a unique value would be if a dissolved iron concentration has been reported lower than 500 µg/L for every storm event monitored at one location and then a value of 2500 µg/L is reported in a later event. This reported concentration of 2500 µg/L should be verified with the laboratory for correctness.

   Besides apparent out-of-range values, the indicators of potential laboratory reporting problems include:

   - Significant lack of agreement between analytical results reported for laboratory duplicates or field duplicates.
   - Consistent reporting of dissolved metals results higher than total or total recoverable metals.
   - Unusual numbers of detected values reported for blank sample analyses.
   - Inconsistency in sample identification/labeling.

   If the laboratory confirms a problem with the reported concentration, the corrected or recalculated result should be issued in an amended report, or if necessary the sample should be re-analyzed. If laboratory results are changed or other corrections are made by the laboratory, an amended laboratory report should be issued to update the project records.

➤ DATA QUALITY EVALUATION

The data quality evaluation process is structured to provide systematic checks to ensure that the reported data accurately represent the concentrations of constituents actually present in stormwater. Data evaluation can often identify sources of contamination in the sampling and analytical processes, as well as detect deficiencies in the laboratory analyses or errors in data reporting. Data quality evaluation allows monitoring data to be used in the proper context with the appropriate level of confidence.

QA/QC parameters that should be reviewed are classified into the following categories:

✓ Reporting limits

- ✔ Holding times
- ✔ Contamination check results (method, field, trip, and equipment blanks)
- ✔ Precision analysis results (laboratory, field, and matrix spike duplicates)
- ✔ Accuracy analysis results (matrix spikes, surrogate spikes, laboratory control samples, and external reference standards)

Each of these QA/QC parameters should be compared to data quality acceptability criteria, inalso known as the project's data quality objectives (DQOs). The key steps that should be adhered to in the analysis of each of these QA/QC parameters are:

1. Compile a complete set of the QA/QC results for the parameter being analyzed.
2. Compare the laboratory QA/QC results to accepted criteria (DQOs).
3. Compile any out-of-range values and report them to the laboratory for verification.
4. Prepare a report that tabulates the success rate for each QA/QC parameter analyzed.

This process should be applied to each of the QA/QC parameters as discussed below.

Reporting Limits

Stormwater quality monitoring program DQOs should contain a list of acceptable reporting limits that the lab is contractually obligated to adhere to, except in special cases of insufficient sample volume or matrix interference problems. The reporting limits used should ensure a high probability of detection. , Table 12-1 provides recommended reporting limits for selected parameters.

Holding Times

Holding time represents the elapsed time between sample collection time and sample analysis time. Calculate the elapsed time between the sampling time and start of analysis, and compare this to the required holding time. For composite samples that are collected within 24-hours or less, the time of the final sample aliquot is considered the "sample collection time" for determining sample holding time. For analytes with critical holding times (≤48 hours), composite samples lasting longer than 24-hours require multiple bottle composite samples. Each of these composite samples should represent less than 24 hours of monitored flow, and subsamples from the composites should have been poured off and analyzed by the laboratory for those constituents with critical holding times (***see Section 12***). It is important to review sample holding times to ensure that analyses occurred within the time period that is generally accepted to maintain stable parameter concentrations. Table 12-1 contains the holding times for selected parameters. If holding times are exceeded, inaccurate concentrations or false negative results may be reported.

Samples that exceed their holding time prior to analysis are qualified as "estimated", or may be rejected depending on the circumstances.

Contamination

Blank samples are used to identify the presence and potential source of sample contamination and are typically one of four types:

1. ***Method blanks*** are prepared and analyzed by the laboratory to identify laboratory contamination.
2. ***Field blanks*** are prepared by the field crew during sampling events and submitted to the laboratory to identify contamination occurring during the collection or the transport of environmental samples.
3. ***Equipment blanks*** are prepared by the field crew or laboratory prior to the monitoring season and used to identify contamination coming from sampling equipment (tubing, pumps, bailers, etc.).
4. ***Trip blanks*** are prepared by the laboratory, carried in the field, and then submitted to the laboratory to identify contamination in the transport and handling of volatile organics samples.
5. ***Filter blanks*** are prepared by field crew or lab technicians performing the sample filtration. Blank water is filtered in the same manner and at the same time as other environmental samples. Filter blanks are used to identify contamination from the filter or filtering process.

If no contamination is present, all blanks should be reported as "not detected" or "non-detect" (e.g., constituent concentrations should not be detected above the reporting limit). Blanks reporting detected concentrations ("hits") should be noted in the written QA/QC data summary prepared by the data reviewer. In the case that the laboratory reports hits on method blanks, a detailed review of raw laboratory data and procedures should be requested from the laboratory to identify any data reporting errors or contamination sources. When other types of blanks are reported above the reporting limit, a similar review should be requested along with a complete review of field procedures and sample handling. Often times it will also be necessary to refer to historical equipment blank results, corresponding method blank results, and field notes to identify contamination sources. This is a corrective and documentative step that should be done as soon as the hits are reported.

If the blank concentration exceeds the laboratory reporting limit, values reported for each associated environmental sample must be evaluated according to USEPA guidelines for data evaluations of organics and metals (USEPA, 1991; USEPA, 1995) as indicated in Table 13-1.

Table 13-1. USEPA Guidelines for Data Evaluation

Step	***Environmental Sample***	***Phthalates and other common contaminants***	***Other Organics***	***Metals***
1.	Sample > 10X blank concentration	No action	No action	No action
2.	Sample < 10X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	No action	Results considered an "upper limit" of the true concentration (note contamination in data quality evaluation narrative).
3.	Sample < 5X blank concentration	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.	Report associated environmental results as "non-detect" at the reported environmental concentration.

Specifically, if the concentration in the environmental sample is less than five times the concentration in the associated blank, the environmental sample result is considered, for reporting purposes, "not-detected" *at the environmental sample result concentration* (phthalate and other common contaminant results are considered non-detect if the environmental sample result is less than ten times the blank concentration). The laboratory reports are not altered in any way. The qualifications resulting from the data evaluation are made to the evaluator's data set for reporting and analysis purposes to account for the apparent contamination problem. For example, if dissolved copper is reported by the laboratory at 4 µg/L and an associated blank concentration for dissolved copper is reported at 1 µg/L, data qualification would be necessary. In the data reporting field of the database (see ***Section 14***), the dissolved copper result would be reported as 4 µg/L*)*, the numerical qualifier would be reported as "<", the reporting limit would be left as reported by the laboratory, and the value qualifier would be reported as "U" ("not detected above the reported environmental concentration").

When reported environmental concentrations are greater than five times (ten times for phthalates) the reported blank "hit" concentration, the environmental result is reported unqualified at the laboratory-reported concentration. For example, if dissolved copper is reported at 11 µg/L and an associated blank concentration for dissolved copper is reported at 1 µg/L, the dissolved copper result would still be reported as 11 µg/L.

Precision

Duplicate samples provide a measure of the data precision (reproducibility) attributable to sampling and analytical procedures. Precision can be calculated as the relative percent difference (RPD) in the following manner:

$$RPD_i = \frac{2 * |O_i - D_i|}{(O_i + D_i)} * 100\%$$

where:

RPD_i = Relative percent difference for compound i

O_i = Value of compound i in original sample

D_i = Value of compound i in duplicate sample

The resultant RPDs should be compared to the criteria specified in the project's DQOs. The DQO criteria shown in Table 13-2 below are based on the analytical method specifications and laboratory-supplied values. Project-specific DQOs should be developed with consideration to the analytical laboratory, the analytical method specifications, and the project objective. Table 13-2 should be used as a reference point as the least stringent set of DQO criteria for Caltrans monitoring projects.

Laboratory and Field Duplicates

Laboratory duplicates are samples that are split by the laboratory. Each half of the split sample is then analyzed and reported by the laboratory. A pair of field duplicates is two samples taken at the same time, in the same manner into two unique containers. Subsampling duplicates are two unique, ostensibly identical, samples taken from one composite bottle (see ***Section 10***). Laboratory duplicate results provide information regarding the variability inherent in the analytical process, and the reproducibility of analytical results. Field duplicate analysis measures both field and laboratory precision, therefore, it is expected that field duplicate results would exhibit greater variability than lab duplicate results. Subsampling duplicates are used as a substitute for field duplicates in some situations and are also an indicator of the variability introduced by the splitting process.

The RPDs resulting from analysis of both laboratory and field duplicates should be reviewed during data evaluation. Deviations from the specified limits, and the effect on reported data, should be noted and commented upon by the data reviewer. Laboratories typically have their own set of maximum allowable RPDs for laboratory duplicates based on their analytical history. In most cases these values are more stringent than those listed in Table 13-2. Note that the laboratory will only apply these maximum allowable RPDs to laboratory duplicates. In most cases field duplicates are submitted "blind" (with pseudonyms) to the laboratory.

Environmental samples associated with laboratory duplicate results greater than the maximum allowable RPD (when the numerical difference is greater than the reporting limit) are qualified as "J" (estimated). When the numerical difference is less than the RL, no qualification is necessary. Field duplicate RPDs are compared against the maximum allowable RPDs used for laboratory duplicates to identify any pattern of problems with reproducibility of results. Any significant pattern of RPD exceedances for field duplicates should be noted in the data report narrative.

Corrective action should be taken to address field or laboratory procedures that are introducing the imprecision of results. The data reviewer can apply "J" (estimated) qualifiers to any data points if there is clear evidence of a field or laboratory bias issue that is not related to contamination. (Qualification based on contamination is assessed with blank samples.)

Laboratories should provide justification for any laboratory duplicate samples with RPDs greater than the maximum allowable value. In some cases, the laboratory will track and document such exceedances, however; in most cases it is the job of the data reviewer to locate these out-of-range RPDs. When asked to justify excessive RPD values for field duplicates, laboratories most often will cite sample splitting problems in the field. Irregularities should be included in the data reviewer's summary, and the laboratory's response should be retained to document laboratory performance, and to track potential chronic problems with laboratory analysis and reporting.

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. Accuracy is measured as the percent recovery (%R) of spike compound(s). Percent recovery of spikes is calculated in the following manner:

$$\%R = 100\% * [(C_s - C) / S]$$

where:

%R = percent recovery

C_s = spiked sample concentration

C = sample concentration for spiked matrices

S = concentration equivalent of spike added

Accuracy (%R) criteria for spike recoveries should be compared with the limits specified in the project DQOs. A list of typical acceptable recoveries is shown in Table 13-2. As in the case of maximum allowable RPDs, laboratories develop acceptable criteria for an allowable range of recovery percentages that may differ from the values listed in Table 13-2.

Percent recoveries should be reviewed during data evaluation, and deviations from the specified limits should be noted in the data reviewer's summary. Justification for out of range recoveries should be provided by the laboratory along with the laboratory reports, or in response to the data reviewer's summary.

Laboratory Matrix Spike and Matrix Spike Duplicate Samples

Evaluation of analytical accuracy and precision in environmental sample matrices is obtained through the analysis of laboratory matrix spike (MS) and matrix spike duplicate (MSD) samples. A matrix spike is an environmental sample that is spiked with a known amount of the constituent being analyzed. A percent recovery can be calculated from the results of the spike analysis. A MSD is a duplicate of this analysis that is performed as a check on matrix recovery precision. MS and MSD results are used together to calculate RPD as with the duplicate samples. When MS/MSD results (%R and RPD) are outside the project specifications, as listed in Table 13-2, the associated environmental samples are qualified as "estimates due to matrix interference". Surrogate standards are added to all environmental and QC samples tested by gas chromatography (GC) or gas chromatography-mass spectroscopy (GC-MS). Surrogates are non-target compounds that are analytically similar to the analytes of interest. The surrogate compounds are spiked into the sample prior to the extraction or analysis. Surrogate recoveries are evaluated with respect to the laboratory acceptance criteria to provide information on the extraction efficiency of every sample.

External Reference Standards

External reference standards (ERS) are artificial certified standards prepared by an external agency and added to a batch of samples. ERS's are not required for every batch of samples, and are often only run quarterly by laboratories. Some laboratories use ERS's in place of laboratory control spikes with every batch of samples. ERS results are assessed the same as laboratory control spikes for qualification purposes (see below). The external reference standards are evaluated in terms of accuracy, expressed as the percent recovery (comparison of the laboratory results with the certified concentrations). The laboratory should report all out-of-range values along with the environmental sample results. ERS values are qualified as biased high" when the ERS recovery exceeds the acceptable recovery range and "biased low" when the ERS recovery is smaller than the recovery range.

Laboratory Control Samples

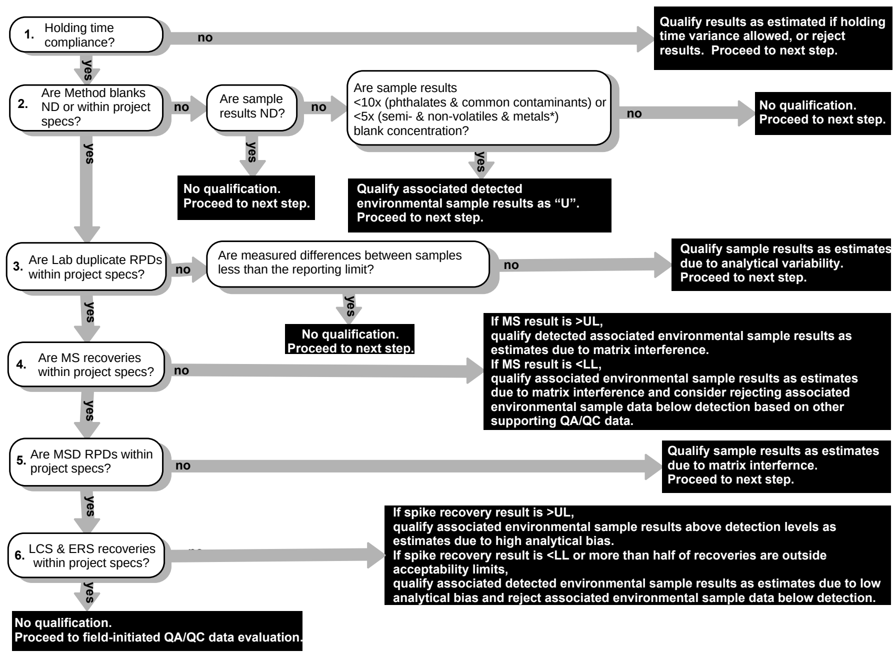
LCS analysis is another batch check of recovery of a known standard solution that is used to assess the accuracy of the entire recovery process. LCSs are much like ERS's except that a certified standard is not necessarily used with LCSs, and the sample is prepared internally by the laboratory so the cost associated with preparing a LCS sample is much lower than the cost of ERS preparation. LCSs are reviewed for percent recovery within

control limits provided by the laboratory. LCS out-of-range values are treated in the same manner as ERS out-of-range values. Because LCS and ERS analysis both check the entire recovery process, any irregularity in these results supersedes other accuracy-related qualification. Data are rejected due to low LCS recoveries when the associated environmental result is below the reporting limit.

A flow chart of the data evaluation process, presented on the following pages as Figures 13-1 (lab-initiated QA/QC samples) and 13-2 (field-initiated QA/QC), can be used as a general guideline for data evaluation. Boxes shaded black in Figures 13-1 and 13-2 designate final results of the QA/QC evaluation.

Table 13-2. Typical Control Limits for Precision and Accuracy for Analytical Constituents

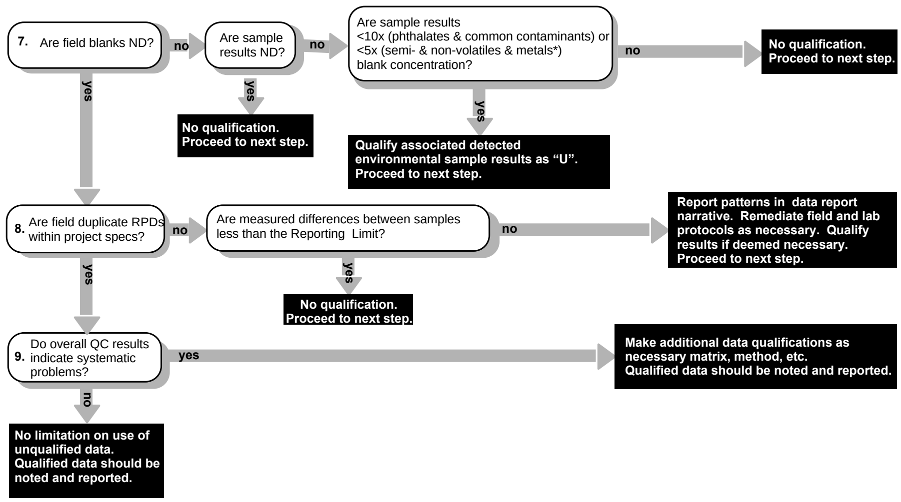
Analyte	EPA Method Number or Standard Method	Maximum Allowable RPD	Recovery Upper Limit	Recovery Lower Limit
Conventionals				
BOD	405.1; SM 5210B	20%	80%	120%
COD	410.1; 410.4; SM 5220C; SM 5220D	20%	80%	120%
Hardness	130.2; 130.1; SM 2340B	20%	80%	120%
pH	150.1	20%	NA	NA
TOC/DOC	415.1	15%	85%	115%
TDS	160.1	20%	80%	120%
TSS	160.2	20%	80%	120%
Turbidity	180.1	20%	NA	NA
Nutrients				
NH3-N	350.2; 350.3	20%	80%	120%
NO3-N	300.0	20%	80%	120%
NO2-N	300.0	20%	80%	120%
NO3/NO2-N	353.2	20%	80%	120%
P	365.2	20%	80%	120%
Ortho-P	365.2; 365.3	20%	80%	120%
TKN	351.3	20%	80%	120%
Metals				
Ag	272.2; 200.8	20%	75%	125%
Al	200.9; 200.8	20%	75%	125%
Cd	213.2; 200.8	20%	75%	125%
Cr	218.2; 200.8	20%	75%	125%
Cu	220.2; 200.8	20%	75%	125%
Ni	249.2; 200.8	20%	75%	125%
Pb	239.2; 200.8	20%	75%	125%
Zn	289.2; 200.8	20%	75%	125%
As	206.3; 200.8	20%	75%	125%
Fe	200.9; SM 3500-Fe B	20%	75%	125%
Se	200.9; 270.3; 200.8	20%	75%	125%
Hg	1631	21%	79%	121%
Total Petroleum Hydrocarbons				
TPH (gasoline)	8015b	21%	45%	129%
TPH (diesel)		21%	45%	129%
TPH (motor oil)		21%	45%	129%
Oil & Grease	1664	18%	79%	114%
Pesticides and Herbicides				
Glyphosate	547	30%	70%	130%
OP Pesticides (esp. diazinon and chlorpyrifos)	8141; ELISA	25%	see method for constituent specific	
OC Pesticides	8081	25%		
Chlorinated Herbicides	8150; 8151	25%		
Carbamate Pesticides	8321	25%		
Miscellaneous Organic Constituents				
Base/Neutrals and Acids	625; 8270	30% to 50% (analyte dependent)	see method for constituent specific	
PAHs	8310			
Purgeables	624; 8260	20%		
Purgeable Halocarbons	601	30%	see method, Table 2	
Purgeable Aromatics	602	20%	see method for constituent specific	
Miscellaneous Constituents				
Cyanide	335.2	20%	75	125
Bacteriological				
Fecal Coliform	SM 9221E	-	-	-
Total Coliform	SM 9221B	-	-	-



*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-1. Technical Data Evaluation for Lab-Initiated QA/QC Samples

Implementing the Monitoring Plan 13-12 May 2000
QA/QC Data Evaluation



*Environmental results between 5x and 10x the blank concentration are qualified as "an upper limit on the true concentration" and the data user should be cautioned.

Figure 13-2. Technical Data Evaluation for Field-Initiated QA/QC Samples

Implementing the Monitoring Plan 13-13 May 2000
QA/QC Data Evaluation

Attachment E

Stormwater Outfall Selection

E-1 Stormwater Outfall Site Selection

The primary criterion cited in the MRP for selection of monitoring sites for the stormwater outfall monitoring program is that the sites are representative of the range of land uses in the area. An additional stated criterion for site selection is the ability to accurately measure flows for pollutant loads characterization. Flow measurement is easily addressed by physical assessment of the site conditions and consideration of access to the site. The primary criterion in the MRP implies an assessment of variation of land uses within the WMA, potential variation in water quality issues for different HUC-12 drainages, and geographic variation in factors influencing runoff quality.

In addition to the primary criteria for monitoring site selection, the Permit defined specific objectives depend on the representativeness of the stormwater outfall monitoring are as follows:.

- Determine the quality of discharge relative to municipal action levels
- Determine whether the discharge is in compliance with WQBELs derived from TMDL WLAs
- Determine whether a discharge causes or contributes to exceedances of receiving water limitations (RWL).

The default approach in the MRP to achieving adequate representation is to select one major outfall in each hydrological unit (HUC–12) within each individual Permittee's jurisdiction. Consequently, the minimum number of outfalls required for monitoring under the default approach is equal to the total number of unique combinations of HUC-12s and jurisdictions. The default approach is geared toward ensuring adequate accountability and representation if the Permittees monitor as individual entities, but results in monitoring more outfall discharges than needed for efforts coordinated among the ESGV Group. For the East San Gabriel Valley WMA, there would be 9 (or possibly 10) stormwater outfalls using the default approach.

The default approach would also result in several areas of relatively small and isolated HUC–12-Jurisdictional overlap for the Group Members. In some cases, these areas are predominately open space or undeveloped area. These areas are essentially an artifact of the default approach and would not provide significant additional characterization of runoff. Specific examples include:

- There is a very small overlap of the Pomona jurisdiction with the Dalton Wash HUC–12 (~78 acres).
- There is a small overlap of the La Verne jurisdiction with the Upper San Jose Creek HUC-12 (~145 acres).
- There is a small overlap of the north La Verne jurisdiction with an HUC–12 (~400 acres of mainly residential area plus substantially more open space).

- There is a small overlap of the south San Dimas jurisdiction with the Upper San Jose HUC-12 (~260 acres of mainly residential area plus substantially more open space).

As an alternative to the MRP's default monitoring approach, the Group Members is proposing to monitor one major outfall for each HUC12 in the WMA. The monitoring sites would consist of two outfalls with drains collecting runoff from two jurisdictions in the northern portion of the WMA, and one outfall in the southern portion of the WMA. The resulting data would be considered representative of all Group Members' discharge in the HUC–12s, would provide representative results needed to meet all three specific monitoring objectives, and would also provide the basis for stormwater management decisions for all Group Members. The rationale supporting the Group Members' alternative approach follows.

E-2 Representativeness of Selected Outfalls

The principal criterion for the site selection for stormwater outfall monitoring is that sites are representative of the range of land uses in the WMA. The drainages within the Group Members' WMA are comprised primarily of residential, commercial, and industrial land uses, with minimal percentages of agriculture and undeveloped open space. The three proposed outfalls were selected specifically to characterize runoff from drainages that are representative of the mix of these primary land uses in the WMA, and to minimize contributions from other land uses. Land use summaries for the ESGV Group are listed in **Table E-1**.

- Residential land use represents 64–84% of the monitored drainages.
- Commercial and Industrial land use represent 10–30% of the monitored drainages.
- Non-urban influences on runoff are minimized: Agriculture represents <1%, and open space represents <3% of the monitored drainages.

The monitored outfalls and drainages are geographically distributed in the WMA, and runoff from all 3 HUC–12s with significant urban drainage is characterized (Big Dalton Wash, Upper San Jose Creek, Upper Chino Creek), as well as runoff from each of the four jurisdictions (Claremont, Pomona, San Dimas, La Verne). The monitored drainages also represent a range of drainage sizes (0.19 – 1.3 square miles) and would directly characterize approximately 3.9% of the total WMP drainage area.

Table E-1.
Land Use Summary, areas in square miles and percent of drainage

Monitored Drainage	Units	Residential	Commercial / Industrial	Agriculture	Open Space	Other (not applicable)	TOTAL	Percent of Total WMP Area (61.3 sq.miles)
	sq.miles	0.159	0.019	0.001	0.0	0.011	0.19	
MTD 766	% drainage	84%	10%	0.6%	0.0%	5.7%	100%	*0.31%*
San Antonio Drain	sq.miles	0.834	0.386	0.0	0.021	0.058	1.30	
	% drainage	64%	30%	0.0%	1.6%	4.4%	100%	*2.1%*
	sq.miles	0.722	0.129	0.0	0.022	0.004	0.877	
BI 0566	% drainage	82%	15%	0.0%	2.5%	0.4%	100%	*1.4%*
								3.9%

E-3 Stormwater Monitoring Data Variability

The inter-event variability (e.g., for different storm events) in stormwater discharge quality is much greater than between individual outfall drainages or major land uses. Based on stormwater monitoring results from other programs, discharge quality from drainages with similar mixed land uses is not substantially different, and it will be impossible to distinguish statistically between drainages with a reasonable amount of monitoring because of the high variability in discharge quality for each site. The statistical power analysis based on the range of typical stormwater discharge quality distributions and the number of sample collected for the permit term, 15 samples per site, is enumerated in **Table E-2**. For example, the analysis results in an average difference between sites would need to be greater than 62% to be detected with 95% confidence and 80% power for a pollutant with a fairly "typical" coefficient of variance (COV) of 0.66. COVs for stormwater discharge quality are generally greater than 0.2 and commonly exceed 1.0. Programmatically meaningful differences (i.e., differences between sites as small as 20%) would not be expected to be detected for most constituents over the time frame of the permit.

Given the high variability typical of stormwater pollutant levels, and with only a few storm events that can be collected per year, it will not be possible to make meaningful distinctions between drainages, either within land use types, across land use types, or between jurisdictions. Management implementation by the Permittees is also expected to be relatively consistent

throughout the WMA, so additional focus on geographic differences is not necessary. This means that only a handful of sites are needed to adequately characterize residential land use discharge quality within the WMA. Consequently, sampling more than a few representative sites is unlikely to significantly improve characterization of runoff quality, or to better inform the Group Memberss's management decisions.

Realistically achievable changes in stormwater runoff quality or loads (e.g., 20–50% reductions) are statistically demonstrable only over relatively long periods of time (≥10 years). This is also due to the high variability between events and the relatively few number of events that can be sampled each season, and additional monitoring sites will do little to improve the statistical power of such trend analysis within the permit time frame compared to longer periods of evaluation. This also supports the need to assess management effectiveness and compliance based primarily on successful implementation actions rather than explicit demonstration of improvements in runoff quality.

E-3.1 Recommendation for Stormwater Outfall Site Selection

Based on the evaluations above, the Group Members's proposed CIMP approach to monitor one outfall for each HUC–12 in the WMA will provide the representative data needed to meet the specific permit objectives for stormwater outfall monitoring and support management decisions of the Group Members. Additional monitoring sites within these three HUC–12s will not provide significant improvements in representation or characterization of discharge quality, or additional information for discharge quality management.

Table E-2.
Detectible Significant Percent Differences between Sites

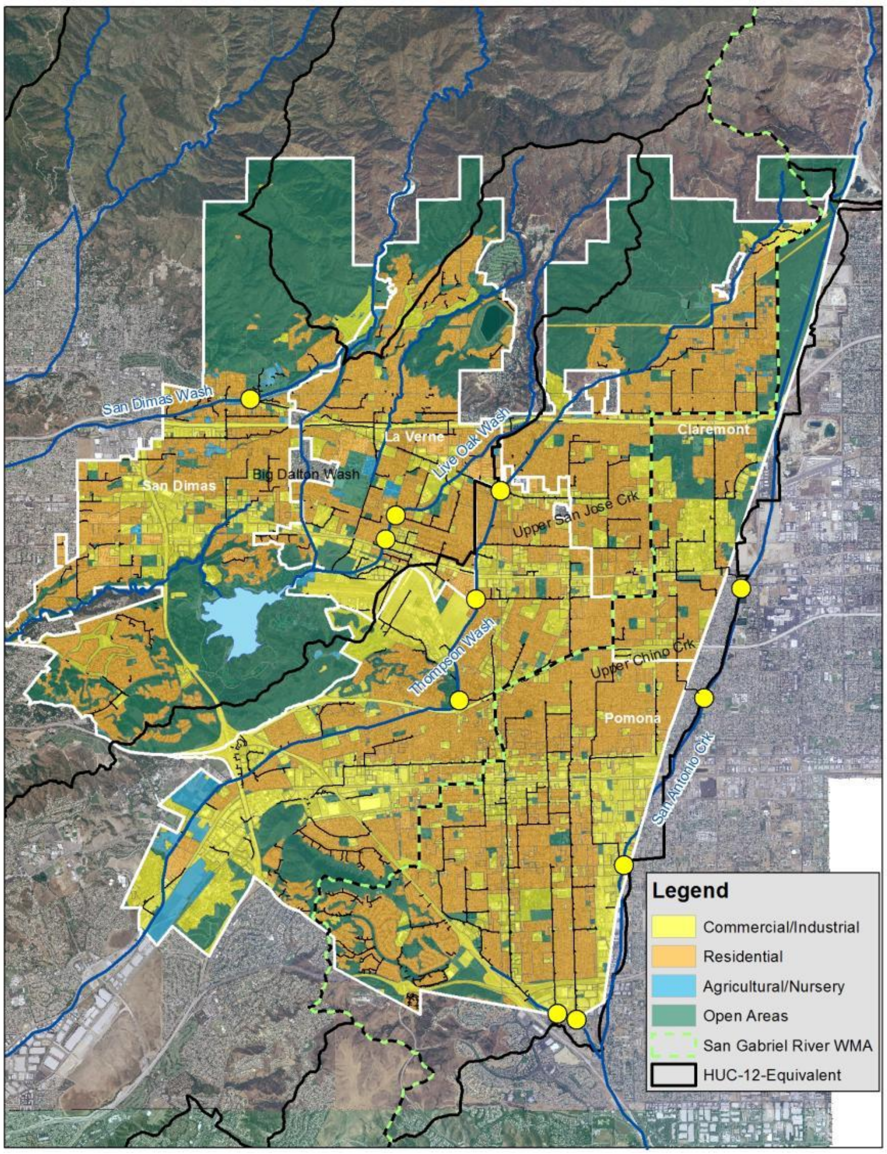
Sample Size = 15, alpha = 0.05		
COV	**power=0.8**	**power 0.9**
0.20	21%	24%
0.31	32%	36%
0.42	42%	48%
0.53	52%	59%
0.66	62%	70%
0.80	71%	81%
0.95	80%	91%
1.12	89%	100%
1.31	97%	109%

Attachment F

Alternate Stormwater Outfall Sites

There are three major HUC-12 Equivalents that cover the jurisdictions of the ESGV WMP Group. Presented below, are potential wet weather outfall monitoring sites by HUC-12 Equivalent as shown in the figure. If for a reason other than water quality it is determined a selected outfall site is unsuitable, alternate sites are provided in this section. While the selected sites were visited, they were not assessed under storm conditions. There is potential for receiving water to back up into an outfall or the site may have unforeseen safety issues under storm conditions. The potential stormwater outfalls are displayed in **Figure F-1**.

Figure F-1.
Potential Stormwater Outfalls



Three potential outfalls considered for wet weather monitoring in the Big Dalton Wash HUC-12 Equivalent are presented in **Table F-1**

Table F-1.
Potential Wet Weather Outfall Monitoring Sites – Big Dalton Wash HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Big Dalton Wash	La Verne	BI 9701 Line A	49”	Square or Rectangle	Reinforced Conc. Box	34.10429	-117.77243
Big Dalton Wash	San Dimas	MTD 766	42”	Round	Reinforced Conc. Pipe	34.12417	-117.80215
Big Dalton Wash	La Verne	BI 0449 La Verne	54”	Square or Rectangle	Reinforced Conc. Box	34.10020	-117.77453

Three potential outfalls considered for wet weather monitoring in the Upper San Jose Creek HUC-12 Equivalent are presented in **Table F-2**.

Table F-2.
Potential Wet Weather Outfall Monitoring Sites – Upper San Jose Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper San Jose Crk	Pomona	BI 0266	93”	Round	Reinforced Conc. Pipe	34.07278	-117.75952
Upper San Jose Crk	Pomona	BI 0520 Line A	107”	Square or Rectangle	Reinforced Conc. Box	34.10831	-117.75105
Upper San Jose Crk	Pomona	RDD 0086 Thompson Crk	48”	Round	Reinforced Conc. Pipe	34.08998	-117.75595

Five potential outfalls considered for wet weather monitoring in the Upper Chino Creek HUC-12 Equivalent are presented in **Table F-3**.

Table F-3.
Potential Wet Weather Outfall Monitoring Sites – Upper Chino Creek HUC-12 Equivalent

HUC-12	City	Drain Name	Size	Shape	Material	Lat	Lon
Upper Chino Crk	Pomona	BI 0267	63”	Square or Rectangle	Reinforced Conc. Box	34.04466	-117.72593
Upper Chino Crk	Pomona	San Antonio Drain Unit 1	108”	Square or Rectangle	Reinforced Conc. Box	34.01836	-117.73567
Upper Chino Crk	Pomona	BI 6402 Unit 1 Line C	81”	Round	Reinforced Conc. Pipe	34.01948	-117.73962
Upper Chino Crk	Claremont	BI 1122	87”	Round	Reinforced Conc. Pipe	34.09178	-117.70173
Upper Chino Crk	Claremont	BI 0022 Line C	90”	Round	Reinforced Conc. Pipe	34.07312	-117.70945