



ENHANCED WATERSHED MANAGEMENT PROGRAM (EWMP)

Submitted By:

Palos Verdes Peninsula

Watershed Management Group

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DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

The following are definitions for terms in this Enhanced Watershed Management Program:

Basin Plan: 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: The existing or potential uses of receiving waters as designated by the Regional Board in the Basin Plan.

Best Management Practices (BMPs): BMPs are 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.

Commercial Development: Any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

Commercial Malls: 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.

Disturbed Area: An area that is altered as a result of clearing, grading, and/or excavation.

Dry Weather: Defined as those days with less than 0.1 inch of rainfall and those days occurring more than 3 days after a rain event.

Effluent Limitation: Any restriction imposed on quantities, discharge rates, and concentrations of pollutants, which are discharged from point sources to waters of the U.S. (40 CFR § 122.2).

Environmentally Sensitive Areas (ESAs): 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 stormwater 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); an area designated as a Significant Natural Area by the California Department of Fish and Game's Significant Natural Areas Program, provided that area has been field verified by the Department of Fish and Game; an area listed in the Basin Plan as supporting the "Rare, Threatened, or Endangered Species (RARE)" beneficial use; and an area identified by a Permittee as environmentally sensitive.

Hillside: 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.

Hydrologic Unit Code (HUC): A standardized watershed classification system in which each hydrologic unit is identified by a unique hydrologic unit code (HUC). The HUC may consist of an eight (8) to twelve (12) digit number. The 8-digit HUC identifies an area based on four levels of classification: region, subregion, hydrologic basin, and hydrologic sub-basin. The Watershed Boundary Dataset includes the 12-digit HUC delineation, which further divides each hydrologic unit into watersheds and sub-watersheds based on scientific information and not administrative boundaries. The Watershed Boundary Dataset is the highest resolution and the most detailed delineation of the watershed boundaries. The mapping precision has been improved to a scale of 1:24,000.

Illicit Connection (IC): Any man-made conveyance that is connected to the storm drain system without a permit, excluding roof drains and other similar type connections. Examples include channels, pipelines, conduits, inlets, or outlets that are connected directly to the storm drain system.

Illicit Discharge (ID): Any discharge into the MS4 or from the MS4 into a receiving water that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes any non-storm water discharge, except authorized non-storm water discharges; conditionally exempt non-storm water discharges; and non-storm water discharges resulting from natural flows specifically identified in Part III.A.1.d of the MS4 Permit.

Industrial/Commercial Facility: Any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition.

Industrial Park: A 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.

Institutional Controls: Programmatic trash control measures that do not require construction or structural modifications to the MS4. Examples include street sweeping, public education, and clean out of catch basins that discharge to storm drains.

Integrated Pest Management (IPM): An ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.

Low Impact Development (LID): LID consists of building and landscape features designed to retain or filter stormwater runoff.

Low Impact Development (LID) Plan: See "SUSMP" definition.

Maximum Extent Practicable (MEP): In selecting BMPs which will achieve MEP, it is important to remember that municipalities will be responsible to reduce the discharge of pollutants in storm water to the maximum extent practicable. This means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive. The following factors may be useful to consider:

1. Effectiveness: Will the BMP address a pollutant of concern?
2. Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?
3. Public acceptance: Does the BMP have public support?
4. Cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?
5. Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc.?

After selecting a menu of BMPs, it is of course the responsibility of the discharger to insure that all BMPs are implemented.

National Pollutant Discharge Elimination System (NPDES): 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.”

Natural Drainage System: A natural drainage system is 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: Land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-stormwater Discharge: Any discharge into the MS4 or from the MS4 into a receiving water that is not composed entirely of stormwater.

Nuisance: Anything that meets all of the following requirements: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.; (3) occurs during, or as a result of, the treatment or disposal of wastes.

Receiving Water: A “water of the United States” into which waste and/or pollutants are or may be discharged.

Receiving Water Limitation: Any applicable numeric or narrative water quality objective or criterion, or limitation to implement the applicable water quality objective or criterion, for the receiving water as contained in Chapter 3 or 7 of the Water Quality Control Plan for the Los Angeles Region (Basin Plan), water quality control plans or policies adopted by the State Water Board, or federal regulations, including but not limited to, 40 CFR § 131.38.

Redevelopment: 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 a routine maintenance activity; and land disturbing activities 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.

Significant Ecological Areas (SEAs): 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 Control BMP: Any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent stormwater pollution by reducing the potential for contamination at the source of pollution.

Stormwater: Stormwater runoff, snow melt, runoff, and surface runoff and drainage related to precipitation events [pursuant to 40 CFR § 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)].

SUSMP: The Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP shall address the Planning and Land Development conditions and requirements of the MS4 Permit.

Wet Season: The calendar period beginning October 1 through April 15.

Wet Weather: Defined as a day with 0.1 inch or more of rain and 3 days following the rain event.

Acronym/Abbreviation	Full Phrase/Definition
µg/L	micrograms per Liter
303(d) List	California's Clean Water Act Section 303(d) List
ASBS	Areas of Special Biological Significance
Basin Plan	Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties
BMP	Best Management Practices
CASQA	California Stormwater Quality Association
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGP	The State Board's Construction General Permit Order No. 2009-0009-DWQ, or as amended.
CIMP	The Peninsula Watershed Group Coordinated Integrated Monitoring Program
Cities	The Peninsula Watershed Group participating cities, only
County	The LACFCD and the LA County DPW
CTR	California Toxics Rule
CWA	Clean Water Act
CWC	California Water Code
DC	Development Construction Program
EIR	Environmental Impact Report
ELRS	Equivalent Load Reduction Strategy
EPA	Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
EWMP	The Peninsula Watershed Group Enhanced Watershed Management Program
GIS	Geographical Information System
gpd	gallons per day
HUC	Hydrologic Unit Code
ICFP	Industrial Commercial Facilities Program
IC/ID	Illicit Connection and Illicit Discharge Elimination
IGP	The State Board's Industrial Storm Water General Permit Order No. 2014-0057-DWQ, or as amended.
IPM	Integrated Pest Management
LA	Load Allocations
LA County DPW	Los Angeles County Department of Public Works
LA MS4 Permit	The Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175
LACFCD	Los Angeles County Flood Control District
LID	Low Impact Development
LID Plan	Low Impact Development Plan
Peninsula Watershed	The area encompassed by the Participating Agencies
MCM	Minimum Control Measure

Acronym/Abbreviation	Full Phrase/Definition
MEP	Maximum Extent Practicable
mg/L	milligrams per Liter
MGD	Million Gallons Per Day
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
MS4 Permit	The Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NSWD	Nonstormwater Discharge
Ocean Plan	Water Quality Control Plan for Ocean Waters of California
PAA	Public Agency Activities
PAAP	Public Agency Activities Program
Participating Agencies	The Peninsula Watershed Group participating agencies
PEIR	Programmatic Environmental Impact Report
PEP	Progressive Enforcement Policy
Permittees	The County of Los Angeles and 85 cities within the coastal watersheds of Los Angeles County
PIP	Public Information and Participation
PIPP	Public Information and Participation Program
PLD	Planning and Land Development
PMP	Pollutant Minimization Plan
POTW	Publicly Owned Treatment Works
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
RAA	Reasonable Assurance Analysis
RAP	Reasonable Assurance Program
Regional Board	California Regional Water Quality Control Board, Los Angeles Region
RP	Responsible Party
RWL	Receiving Water Limit
SEA	Significant Ecological Area
SIC	Standard Industrial Classification
SMARTS	State Water Resources Control Board's Storm Water Multiple Application and Report Tracking System
SQMP	Stormwater Quality Management Programs
SSMP	Sewer System Management Plan
SSO	Sewer Leaks, sanitary sewer overflow
State Board	California State Water Resources Control Board

Acronym/Abbreviation	Full Phrase/Definition
State Listing Policy	State Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List
SUSMP	Standard Urban Stormwater Mitigation Plan
SWPPP	Stormwater Pollution Prevention Plan
SWQDV	Stormwater Quality Design Volume
TAC	Technical Advisory Committee
TCM	Targeted Control Measure
TMDL	Total Maximum Daily Load
TRA	Training
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WDID	Waste Discharge Identification
WLA	Waste Load Allocations
WCM	Watershed Control Measure
WMG	Watershed Management Group
WQBEL	Water Quality Based Effluent Limitations
WQO	Water Quality Objective
WQP	Water Quality Priority
WRP	Water Reclamation Plant

1. INTRODUCTION AND BACKGROUND

1.1. INTRODUCTION

The 2012 Municipal Separate Storm Sewer System Permit¹ (MS4 Permit) was adopted on November 8, 2012, by the Los Angeles Regional Water Quality Control Board (Regional Board) and became effective December 28, 2012. The purpose of the MS4 Permit is to protect the beneficial uses of the receiving waters in the Los Angeles County region by regulating municipal stormwater and non-stormwater discharges from the permittees' MS4s. The Permit allows permittees the flexibility of developing an Enhanced Watershed Management Program (EWMP) to implement the requirements of the Permit. Implementation is to be achieved on a watershed basis through customized strategies, control measures, and BMPs to ensure that discharges from the permittees' MS4s:

- i. Achieve applicable WQBELs,
- ii. Do not cause or contribute to exceedances of receiving water limitations, and
- iii. Do not include non-storm water discharges that are effectively prohibited.

An EWMP further requires multi-benefit regional projects through collaboration among permittees and other partners within participating permittees' collective jurisdictional area in a WMA.

Following the adoption of the MS4 Permit, the Cities of Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, along with the County of Los Angeles (Unincorporated County), and Los Angeles County Flood Control District (LACFCD) began to collaborate on the development of an EWMP to address the water quality priorities for the Palos Verdes Peninsula watersheds. This group of Permittees is referred to as the Palos Verdes Peninsula Watershed Management Group (Peninsula WMG). The Peninsula WMG previously submitted a Notice of Intent (NOI) to develop the Peninsula EWMP and an EWMP Work Plan. In addition, the Peninsula WMG has been coordinating with other agencies and watershed management groups in the development of this EWMP, including the City of Los Angeles, the Dominguez Channel EWMP Group, and the Beach Cities EWMP Group.

This Enhanced Watershed Management Program (EWMP) has been developed to implement the requirements of the MS4 Permit on a watershed scale. The goal of these requirements is to reduce the discharge of pollutants from MS4s to the maximum extent practicable.²

1.2. PENINSULA WATERSHED

The geographic scope of the Peninsula EWMP (as shown in Figure 1-1) is comprised of the incorporated Cities of Rancho Palos Verdes, Palos Verdes Estates and Rolling Hills Estates and unincorporated areas of the County of Los Angeles and LACFCD facilities (See Appendix 1 for a description of the LACFCD and its responsibilities within the Peninsula WMG). The City of Rolling Hills is not participating in the Peninsula EWMP; however, the city is participating in the Peninsula WMG Coordinated Integrated Monitoring Program (CIMP).

¹California Regional Water Quality Control Board Los Angeles Region. 2012. Order No. R4-2012-0175 NPDES Permit No. CAS004001 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.

² Reference: http://www.swrcb.ca.gov/water_issues/programs/stormwater/municipal.shtml

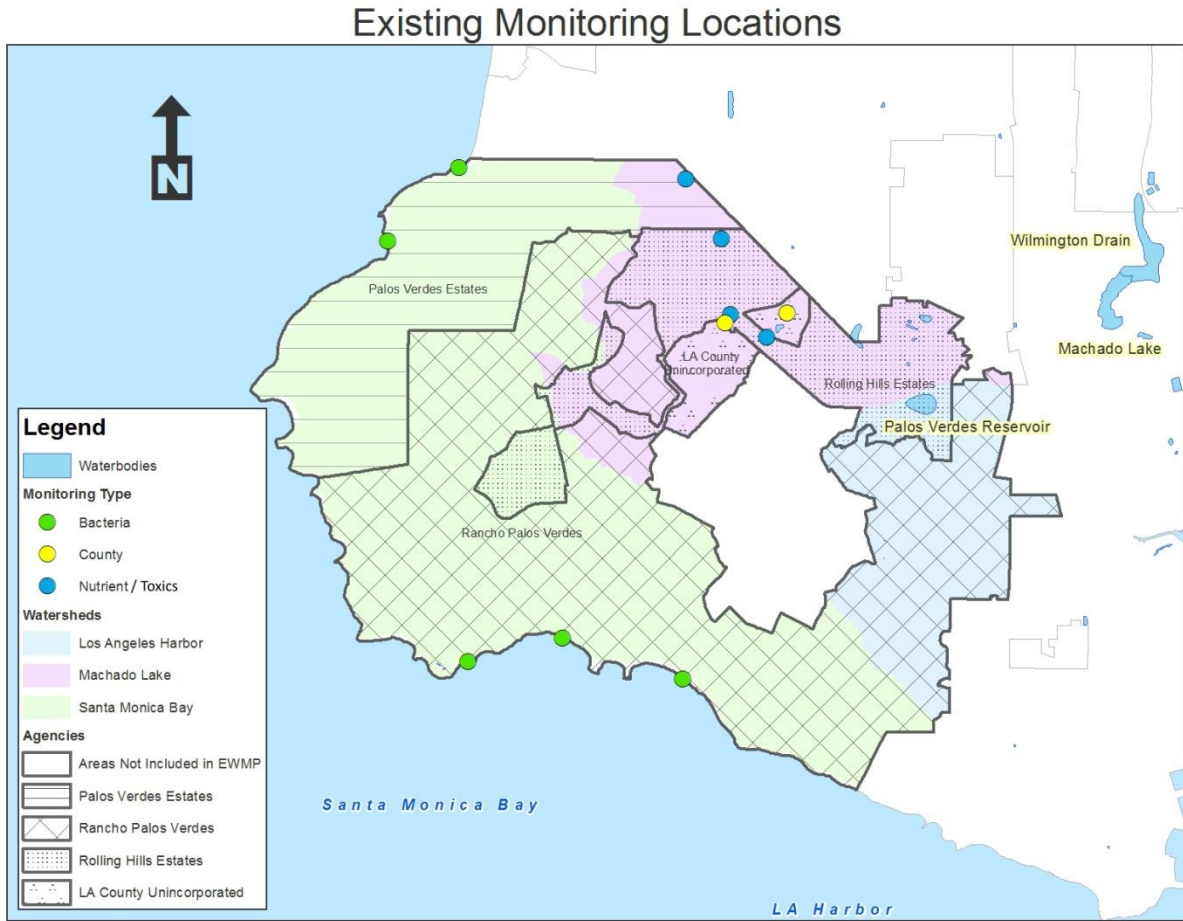
Enhanced Watershed Management Program

The Palos Verdes Peninsula is situated in the southwestern portion of Los Angeles County atop the Palos Verdes Hills, which are bounded to the north by the City of Torrance, to the east by the San Pedro area of the City of Los Angeles, and to the south and west by the Pacific Ocean. The Peninsula WMG area is divided into two HUC-12 equivalent watersheds: 1) Santa Monica Bay (SMB) Watershed and 2) the Greater Dominguez Channel Watershed Management Area, which is subdivided into two subwatersheds, the Los Angeles Harbor Subwatershed and the Machado Lake Subwatershed. A change in drainage divides the Peninsula from the northeast to the southwest with the westerly and southwesterly portion draining into Santa Monica Bay and the northeasterly portion draining to Machado Lake and the Los Angeles Harbor subwatersheds. The SMB Watershed accounts for 63% (14.2 square miles) of the total Peninsula WMG area, and includes portions of the cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates. The Los Angeles Harbor Subwatershed accounts for 15% (3.4 square miles) of the total Peninsula WMG area, and includes portions of the cities of Rancho Palos Verdes and Rolling Hills Estates. The Machado Lake Subwatershed accounts for 22% (4.9 square miles) of the total Peninsula WMG area, and includes portions of the cities of Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, and the County of Los Angeles. Drainage from the Peninsula WMG agencies is conveyed via natural soft bottom canyons in conjunction with structured storm drain systems. Table 1-1 provides the Peninsula EWMP area identified by watershed and agency, and Figure 1-1 provides a map of the Peninsula EWMP watershed and jurisdictional boundaries, including existing water quality monitoring sites in the Peninsula EWMP area.

Table 1-1: Jurisdictional Areas within Each Peninsula EWMP Watershed

Permittee	Rancho Palos Verdes	Palos Verdes Estates	Rolling Hills Estates	County of Los Angeles	Total
Land Area within Santa Monica Bay Watershed (Square Miles)	9.35	4.35	0.46	0	14.2
Land Area within Machado Lake Subwatershed (Square Miles)	1.07	0.39	2.78	0.7	4.9
Land Area within Los Angeles Harbor Subwatershed (Square Miles)	3.02	0	0.34	0	3.4
Total EWMP Area	13.5	4.8	3.6	0.7	22.6

Palos Verdes Peninsula
Enhanced Watershed Management Program



Date: 4/28/2015

Figure 1-1: Peninsula EWMP Area and Existing Monitoring Locations

1.3. WATER QUALITY ISSUES AND THE HISTORY OF WATER QUALITY REGULATIONS

1.3.1. FEDERAL AND STATE LAW

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for all inland surface waters, estuaries, and coastal waters. The federal Environmental Protection Agency (EPA) is ultimately responsible for implementation of the CWA and its associated regulations. However, the CWA allowed EPA to authorize the NPDES Permit Program to state governments, enabling states to perform many of the permitting, administrative, and enforcement aspects of the NPDES Program. California, like other states, implements the CWA by promulgating its own water quality protection laws and regulations. As long as this authority provides equivalent protections as the federal CWA, EPA can delegate CWA responsibilities to the state while retaining oversight responsibilities. In some cases, California has established requirements that are more stringent than federal requirements.

The 1970 Porter-Cologne Water Quality Control Act granted the California State Water Resources Control Board (SWRCB) and nine California Regional Water Quality Control Boards (Regional Boards) broad powers to protect water quality. This Act and its governing regulations provide the basis for California's implementation of CWA responsibilities. The Los Angeles Regional Water Quality Control Board (Regional Board) is the governing regulatory agency for the Peninsula Watershed.

Section 303(d) of the CWA requires waterbodies not meeting water quality objectives even after all required effluent limitations have been implemented (e.g. through wastewater or stormwater discharge Permit) to be regularly identified. These waters are often referred to as "303(d) listed" or "impaired" waters. Waterbodies that are listed on the 303(d) list typically require development of a Total Maximum Daily Load (TMDL) for the pollutant(s) impairing the use of the water. Development and approval of the 303(d) list is a lengthy state and federal process. A list is not effective until the EPA approves the list. The current EPA-approved 303(d) list for California is the 2010 list.

A TMDL establishes the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. Depending on the nature of the pollutant, TMDL implementation requires limits on the contributions of pollutants from point sources (waste load allocation), nonpoint sources (load allocation), or both. The Regional Board is responsible for TMDL development in the Peninsula Watershed.

Adoption of a TMDL requires an amendment to the Water Quality Control Plan (known as the Basin Plan) for the Los Angeles Region. The Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy, and (iii) describes implementation programs to protect all waters in the Region. The Basin Plan is reviewed and updated as necessary (Regional Board 1994, as amended). Following adoption by the Regional Board, the Basin Plan and subsequent amendments are subject to approval by the State Board, the State Office of Administrative Law (OAL), and the Environmental Protection Agency (EPA).

1.4. WATER QUALITY REQUIREMENTS

The Regional Board designates "beneficial uses" for waterbodies in the watersheds that it governs and adopts water quality objectives to protect these uses³. In some cases, EPA may also promulgate objectives where it makes a finding that the state's objectives are not protective enough to protect the beneficial use. The nature of the objectives is directly related to the type of beneficial use. For example, the freshwater warm habitat beneficial use protects aquatic organisms resident in warm-water streams. The associated water quality objectives are for those constituents known to affect both the growth and reproduction of aquatic life. These objectives range from physical characteristics such as temperature, dissolved oxygen, and pH to potential toxic constituents including metals and organics. In California, the objectives for metals and a number of organic compounds have been established by the federal EPA rather than the state (California Toxics Rule, 2000). The EPA promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions based on the determination that the numeric criteria were necessary (since the state had been without numeric water quality criteria for many priority toxic pollutants as required by the CWA) to protect human health and the environment. These Federal criteria are legally applicable in the state for inland surface waters, enclosed bays and estuaries for all purposes and programs under the CWA.

1.5. THE ENHANCED WATERSHED MANAGEMENT PROGRAM

1.5.1. REGULATORY FRAMEWORK

In 1972 the National Pollution Discharge Elimination System (NPDES) was created through Section 402 of the Clean Water Act. NPDES prohibits discharges of pollutants from any point source into the nation's waters except as allowed under an NPDES permit, including the MS4 system. The MS4 system includes curbs and gutters, man-made channels, catch basins and storm drains.

The State Water Resources Control Board (State Board) chartered nine Regional Water Quality Control Boards to be responsible for ensuring that counties, cities and other dischargers meet the requirements of the Clean Water Act. To enforce clean water at the local level, municipalities and the County of Los Angeles unincorporated areas are required to obtain a discharge permit from the Regional Board to discharge stormwater, hence the MS4 Permit. The MS4 Permit includes effluent limitations, receiving water limitations, minimum control measures (MCMs), and TMDL provisions, and outlines the process for developing watershed management programs, including the EWMP. The MS4 Permit also incorporates Total Maximum Daily Loads (TMDLs) for impaired surface waters in Los Angeles County. TMDLs represent the amount of a pollutant that can be released into a waterbody to ensure attainment of water quality standards and protection of the waterbody's beneficial uses.

Development of an EWMP is one of the compliance options outlined in the MS4 Permit to address effluent limitations, receiving water limitations, and TMDLs. The EWMP must also incorporate MCMs, which are programs required to be implemented to address water quality issues.

³ See Regional Board's 1994 Los Angeles Region Basin Plan, as amended.

1.5.2. PURPOSE OF THE MS4 PERMIT

MS4s receive stormwater and non-stormwater discharges from various sources, including adjacent municipal MS4s and other public agencies, discharges under NPDES Permit or authorized by the USEPA⁴, groundwater and natural flow. As the discharges flow over the urban landscape, they may pick up pollutants generated by urban activities, such as metals, bacteria, pesticides, fertilizers and trash. Polluted stormwater and non-stormwater discharges conveyed through the MS4 can ultimately reach receiving waters, resulting in adverse water quality impacts.⁵

The goal of the MS4 Permit is to reduce the discharge of these pollutants from MS4s to the maximum extent practicable; this may be accomplished through the implementation of WMPs and EWMPs.

1.5.3. WATERSHED MANAGEMENT EMPHASIS

The watershed management approach to permit implementation – described in the current MS4 Permit as a voluntary approach to compliance – is a departure from previous permit structures. The previous MS4 Permit (Order No. 01-182) addressed implementation through jurisdictional Stormwater Quality Management Programs (SQMPs). The Los Angeles countywide SQMP, prepared jointly by the Permittees and approved by the Regional Board in 2001, described the controls to be implemented in order to comply with the special provisions (now referred to as the Minimum Control Measures, or MCMs) of the MS4 Permit. These controls were identical for each Permittee and did not 1) differentiate between watersheds or agencies or 2) target or identify priority pollutants.

The emphasis of the prior SQMP approach was rote program development and implementation. In contrast, management actions under the EWMP are driven by the water quality conditions of the receiving waters and outfalls within the watershed.

The Regional Board outlines several reasons for this shift in emphasis from the previous MS4 Permit. A watershed based structure for permit implementation is consistent with TMDLs developed by the Los Angeles Water Board and USEPA, which are established at a watershed or subwatershed scale and are a prominent part of the MS4 Permit. The participating agencies have already begun collaborating on a watershed scale to develop monitoring and implementation plans required by TMDLs.

1.5.4. WATERSHED MANAGEMENT GOALS AND PRIORITIES

Addressing MS4 discharges on a watershed scale focuses on water quality results by emphasizing the receiving waters and outfalls within the watershed⁶. The conditions of the receiving waters drive management actions, which in turn focus on the measures to address pollutant contributions from MS4 discharges.

The ultimate goals of the EWMP is to ensure that discharges from the MS4:

1. Achieve applicable Water Quality Based Effluent Limitations (WQBELs) that implement TMDLs,
2. Do not cause or contribute to exceedances of receiving water limitations,
3. Non-stormwater discharges from the MS4 are not a source of pollutants to receiving waters.

⁴ Including discharges subject to a decision document approved pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

⁵ MS4 Permit Fact Sheet (pg. F7)

⁶ MS4 compliance is measured at 1) Receiving water monitoring, 2) Stormwater outfall based monitoring, 3) Non-storm water outfall based monitoring, and 4) New Development/Re-development effectiveness tracking.

Enhanced Watershed Management Program

This EWMP has also incorporated State agency input from various sources on priority setting and implementation issues. Specific priorities incorporated include, but are not limited to, the following:

- The EWMP is consistent with priorities listed in SB 985 and is in accordance with the Storm Water Resource Plan Guidelines⁷ for all categories with the exception of those which are more applicable to the Peninsula Coordinated Integrated Monitoring Plan and the California Water Service Urban Water Management Plan.
- The Peninsula WMG lies within the South Bay subregion of the LA IRWMP and will include its regional projects in the LA IRWMP database.
- The Stormwater Strategic Initiative⁸ identifies prioritization of projects to address issues facing the storm water program. Efforts described within this EWMP have used the same priorities in mind, including, but not limited to optimizing the use of stormwater as a resource and providing consistent and widespread messaging to broaden the understanding of the value of stormwater.
- The Strategy to Optimize Resource Management of Storm Water⁹ identifies four main goals, all of which the EWMP has incorporated: 1) Change the Perspective that Storm Water is a Waste or Hazard, and Treat it as a Valuable Water Resource; 2) Manage Storm Water to Preserve Watershed Processes and Achieve Desired Water Quality and Environmental Outcomes; 3) Implement Efficient and Effective Regulatory Programs; and 4) Collaborate in order to Solve Water Quality and Pollutant Problems with an Array of Regulatory and Non-Regulatory Approaches
- The California Water Action Plan¹⁰ describes several actions to address the drought in California. The actions which this EWMP has incorporated include: making conservation a California way of life; increasing regional self-reliance and integrated water management across all levels of government; protecting and restoring important ecosystems; managing and preparing for dry periods; expanding water storage capacity and improving groundwater management; and providing safe water for all communities.
- The EWMP has incorporated goals in line with the 2010-2012 Strategic Plan¹¹, including:
 - **Collaboration** – Advance collaboration to address water quality problems in California;
 - **Education/Outreach** – Advance the knowledge of stormwater quality professionals and increase the awareness and knowledge of policy-makers and regulators in California regarding stormwater issues;
 - **Implementation Guidance** – Advance the quality of implementation guidance for environmentally beneficial and cost-effective adaptive management approaches to improving stormwater quality in California that emphasize true source control and operational source control over treatment;
 - **Regulatory Review** – Advance the development of consistent, proactive, and flexible stormwater policy and regulations consistent with the maximum extent practicable (MEP) standard of pollutant reduction through the incorporation of the latest scientific and economic information to promote the protection of water quality of beneficial uses; and
 - **Scientific Assessment** – Advance the understanding of pollutants of concern and their sources, fate, and transport, and the effectiveness of best management practices (BMPs) to control them.

⁷ Storm Water Resource Plan Guidelines. State Water Resources Control Board. December 15, 2015.

⁸ Stormwater Strategic Initiative. State Water Resources Control Board. June 25, 2015.

⁹ Strategy to Optimize Resource Management of Storm Water. State Water Resources Control Board. December 11, 2015.

¹⁰ California Water Action Plan. California Natural Resources Agency, California Department of Food and Agriculture, and the California Environmental Protection Agency (Cal/EPA). January 22, 2014.

¹¹ Strategic Plan 2010 – 2012. California Stormwater Quality Association (CASQA). May 2010.

1.5.5. WATER QUALITY MANAGEMENT APPROACH

The development of this EWMP is a compliance option of the MS4 Permit held by the Permittees. The EWMP includes an evaluation of existing water quality conditions, including characterization of storm water and non-storm water discharges from the MS4 and receiving water quality to support identification and prioritization/sequencing of management actions. At a minimum, water quality priorities within each Watershed Management Area must include achieving applicable water quality based effluent limitations and/or established receiving water limitations.

The MS4 permit requires that this EWMP identifies strategies, control measures, and BMPs to implement through the stormwater management programs on a watershed scale, with the goal of creating an efficient program to focus collective resources on watershed priorities and effectively eliminate the source of pollutants. Customization of the BMPs to be implemented, or required to be implemented, is done with the goal of creating an efficient program to focus individual and collective resources on watershed priorities.

On the basis of the evaluation of existing water quality conditions, waterbody-pollutant combinations are classified into one of the following three categories:

- **CATEGORY 1 (HIGHEST PRIORITY):** Waterbody-pollutant combinations for which water quality based effluent limitations and/or receiving water limitations are included in the MS4 Permit to implement TMDLs.
- **CATEGORY 2 (HIGH PRIORITY):** Pollutants for which data indicate water quality impairment in the receiving water according to the State's Listing Policy and for which MS4 discharges may be causing or contributing to the impairment.
- **CATEGORY 3 (MEDIUM PRIORITY):** Pollutants for which there are insufficient data to indicate water quality 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 exceedances.

Sources for the waterbody-pollutant combinations are identified by considering the following:

- Review of available data, including historical findings from the participating agencies' Minimum Control Measure and TMDL programs, watershed model results and other pertinent information, data or studies.
- Locations of major MS4 outfalls and major structural controls for stormwater and nonstormwater that discharge to receiving waters.
- Other known and suspected sources of pollutants from the MS4 to receiving waters.

Based on the findings of the source assessment, the issues within the watershed are prioritized and sequenced. Factors considered in establishing watershed priorities include:

1. Pollutants for which there are water quality based effluent limitations and/or receiving water limitations with interim or final compliance deadlines within the permit term.
2. Pollutants for which there are water quality based effluent limitations and/or receiving water limitations with interim or final compliance deadlines between October 26, 2012 and December 28, 2017.
3. Pollutants for which data indicate impairment in the receiving water and the findings from the source assessment implicates discharges from the MS4, but no TMDL has been developed.

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In order to achieve the goals of the MS4 Permit, the approach of the EWMP is to:

- Prioritize water quality issues resulting from stormwater and non-stormwater discharges from the MS4 to receiving waters,
- Identify and implement strategies, control measures, and BMPs that:
 - Achieve applicable water quality-based effluent limitations¹²
 - Prevent exceedances of receiving water limitation¹³
 - Prevent non-stormwater discharges that are effectively prohibited¹⁴
 - Reduce the discharge of pollutants to the maximum extent practicable¹⁵
- Execute an integrated monitoring program and assessment program¹⁶ to determine progress towards achieving applicable limitations and/or action levels
- Modify strategies, control measures, and BMPs as necessary based on analysis of monitoring data collected pursuant to the Monitoring and Reporting Program (MRP) to ensure that applicable water quality-based effluent limitations and receiving water limitations and other milestones set forth in the EWMP are achieved in the targeted timeframes.
- Provide meaningful input through participation in a permit-wide EWMP technical advisory committee (TAC) that advises and participates in the development of the EWMP from month six through the date of program approval.

The overall approach is adaptive, whereby BMPs will be implemented, their effectiveness monitored and modifications to this EWMP will be made as needed. These modifications will maintain consistency with the assumptions and requirements of applicable TMDL Waste Load Allocations.

1.5.6. CALIFORNIA ENVIRONMENTAL QUALITY ACT

The LACFCD has prepared a Programmatic Environmental Impact Report (PEIR) for all EWMP groups in which they are a part. This PEIR will cover the EWMPs as a whole.

In addition, the stormwater structural controls that will be implemented as a result the EWMP may require discretionary approval subject to review under the California Environmental Quality Act (CEQA). The participating agencies intend to comply with CEQA when implementing structural BMPs. Public agencies responsible for carrying out or approving stormwater structural controls are identified as the lead agency. The environmental review required imposes both procedural and substantive requirements. At a minimum, the lead agency must adhere to the consultation and public notice requirements set forth in the CEQA Guidelines, make determinations whether the proposed stormwater structural control is a “project”, and if so, conduct an initial review of the project and its environmental effects. The lead agency must identify and document the potential environmental impacts of the proposed project in accordance with CEQA, (Public Resources Code Section 21000 et seq.), and the CEQA Guidelines (Title 14 of the California Code of Regulations, Section 15000, et seq.).

¹² Pursuant to Part VI.E and Attachments L through R of the Permit pursuant to corresponding compliance schedules

¹³ Pursuant to Parts V.A and VI.E and Attachments L through R of the Permit

¹⁴ Pursuant to Part III.A of the Permit

¹⁵ Pursuant to Part IV.A.1 of the Permit

¹⁶ Pursuant to Attachment E – MRP, Part IV of the Permit

Enhanced Watershed Management Program

Certain classes of projects have been determined not to have significant effect on the environment and are exempt from the provisions of CEQA by statute or category. When a public agency decides that a project is exempt from CEQA, and the public agency approves or determines to carry out the project, the agency may file a Notice of Exemption. For projects deemed not exempt, the lead agency will prepare an Initial Study and decide whether a Negative Declaration will be required for the project, or depending on the potential effects, a further, and more substantial review may be conducted in the form of an Environmental Impact Report (EIR). A project may not be approved as submitted if feasible alternatives or Mitigation Measures are not able to substantially lessen the significant environmental effects of the project. Moreover, environmental review must include provisions for wide public involvement, formal and informal, in order to receive and evaluate public reactions to environmental issues, and when deciding the matter, the lead agency must consider all comments it receives (Cal. Pub. Res. Code § 21091(d)(1); 14 CCR § 15074(b)). The lead agency will use the EIR in determining the environmental effects of the proposed storm water treatment control project, and whether or not to approve the proposed project. If the proposed project is approved, all conditions and mitigations made in the adopted EIR will become part of any subsequent actions taken by the lead agency. The EIR will also be used by permitting agencies, funding agencies and the public to support proposed project decisions.

The National Environmental Policy Act (NEPA) comes into play less often than CEQA, but may be included for storm water treatment control projects involving federal funding. A joint NEPA and CEQA review process is encouraged to improve coordination and avoid redundancies. Like CEQA, NEPA process provides opportunities to address issues related to proposed projects early in the planning stages. NEPA was codified under Title 42 of the United States Code sections 4331 et seq. (42 U.S.C. 4331 et seq.).

1.6. REASONABLE ASSURANCE ANALYSIS AND WATERSHED CONTROL MEASURES

As part of the EWMP plan, a Reasonable Assurance Analysis (RAA) is conducted on a watershed level. The RAA consists of an assessment, through quantitative analysis or modeling, to demonstrate that the activities and control measures (i.e. BMPs) identified in the Watershed Control Measures section of the EWMP are performed to demonstrate that applicable water quality based effluent limitations and/or receiving water limitations with compliance deadlines during the permit term will be achieved. Watershed Control Measures are subdivided into 1) Minimum Control Measures, 2) Non-Stormwater Discharge Measures 3) TMDL Control Measures and 4) other control measures.

Schedules are developed for strategies, control measures and BMPs to be implemented by each individual Permittee within its jurisdiction and for those that will be implemented by multiple Permittees on a watershed scale. The schedules will measure progress every two years during the permit term and incorporate:

- 1) Compliance deadlines occurring within the permit term for all applicable interim and/or final water quality based effluent limitations and/or receiving water limitations to implement TMDLs,
- 2) Interim deadlines and numeric milestones within the permit term for any applicable final water quality based effluent limitation and/or receiving water limitation to implement TMDLs, where deadlines within the permit term were not otherwise specified, and
- 3) Watershed priorities related to addressing exceedances of receiving water limitations.

1.7. ADAPTIVE MANAGEMENT

An adaptive management process will be implemented every two years from the date of program approval, adapting the EWMP to become more effective, based on, but not limited to the following:

1. Progress toward achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the watershed control measures,
2. Progress toward achieving interim and/or final water quality based effluent limitations and/or receiving water limitations, or other numeric milestones where specified, according to established compliance schedules,
3. Achievement of interim milestones;
4. Reopening of TMDLs;
5. Re-evaluation of the highest water quality priorities identified for the Watershed Management Area based on more recent water quality data for discharges from the MS4 and the receiving water(s) and a reassessment of sources of pollutants in MS4 discharges,
6. Availability of new information and data from sources other than the Permittees' monitoring program(s) within the Watershed Management Area that informs the effectiveness of the actions implemented by the Permittees,
7. Regional Water Board recommendations; and
8. Recommendations for modifications to the EWMP solicited through a public participation process

Based on the results of the adaptive management process, modifications necessary to improve the effectiveness of the EWMP will be reported in the Annual Report, and as part of the Report of Waste Discharge (ROWD). Any necessary modifications to the EWMP will be implemented upon acceptance by the Regional Water Board Executive Officer within 60 days of submittal if the Regional Water Board Executive Officer expresses no objections.

2. IDENTIFICATION OF WATER QUALITY PRIORITIES

2.1. WATERBODY POLLUTANT CLASSIFICATION

One of the goals of this Enhanced Watershed Management Program (EWMP) is to identify and address water quality priorities within the Palos Verdes Peninsula (Peninsula) Watershed. In order to begin prioritizing water quality issues within the Peninsula Watershed, an evaluation of existing water quality conditions, including characterization of stormwater and nonstormwater discharges from the Municipal Separate Storm Sewer System (MS4) and receiving waters has been completed per section VI.C.5.a of the MS4 Permit.

The existing water quality conditions of the Peninsula Watershed were used to classify pollutants into three categories each containing specific subcategories. These categories form the basis for identifying watershed priorities, which include, at a minimum, achieving applicable water quality-based effluent limitations and/or receiving water limitations established pursuant to TMDLs. The three categories and their subcategories are described below:

CATEGORY 1: Waterbody-pollutant combinations for which water quality-based effluent limitations and/or receiving water limitations are established in Part VI.E TMDL Provisions and Attachments L through R of the MS4 Permit.

- CATEGORY 1A: Final deadlines within Permit term (after approval of EWMP¹ & prior to December 28, 2017)
- CATEGORY 1B: Interim deadlines within Permit term (after approval of EWMP² & prior to December 28, 2017)
- CATEGORY 1C: Final deadlines between December 29, 2017 - December 28, 2022
- CATEGORY 1D: Interim deadlines between December 29, 2017 - December 28, 2022
- CATEGORY 1E: Interim & final deadlines after December 28, 2022
- CATEGORY 1F: Past final deadlines (final deadlines due prior to approval of EWMP)
- CATEGORY 1G: USEPA established TMDLs with no implementation schedule

CATEGORY 2: Pollutants for which data indicate water quality impairment in the receiving water according to the State Board's Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (State Listing Policy) and for which MS4 discharges may be causing or contributing to the impairment.

- CATEGORY 2A: Non-legacy pollutants
- CATEGORY 2B: Bacterial indicators
- CATEGORY 2C: Legacy pollutants
- CATEGORY 2D: Water quality indicators

¹ Upon approval and no later than April 28, 2016.

² *Ibid.*

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CATEGORY 3: Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State’s Listing Policy, but which exceed applicable receiving water limitations contained in this Order and for which MS4 discharges may be causing or contributing to the exceedance.

- CATEGORY 3A: Non-legacy pollutants
- CATEGORY 3B: Bacterial indicators
- CATEGORY 3C: Legacy pollutants
- CATEGORY 3D: Water quality indicators

The Peninsula Watershed encompasses portions of the drainage area tributary to Santa Monica Bay, Machado Lake, Wilmington Drain, and the Greater Los Angeles Harbor. The pollutants for which the Peninsula Watershed is listed as impaired for are shown on Figure 2-1.

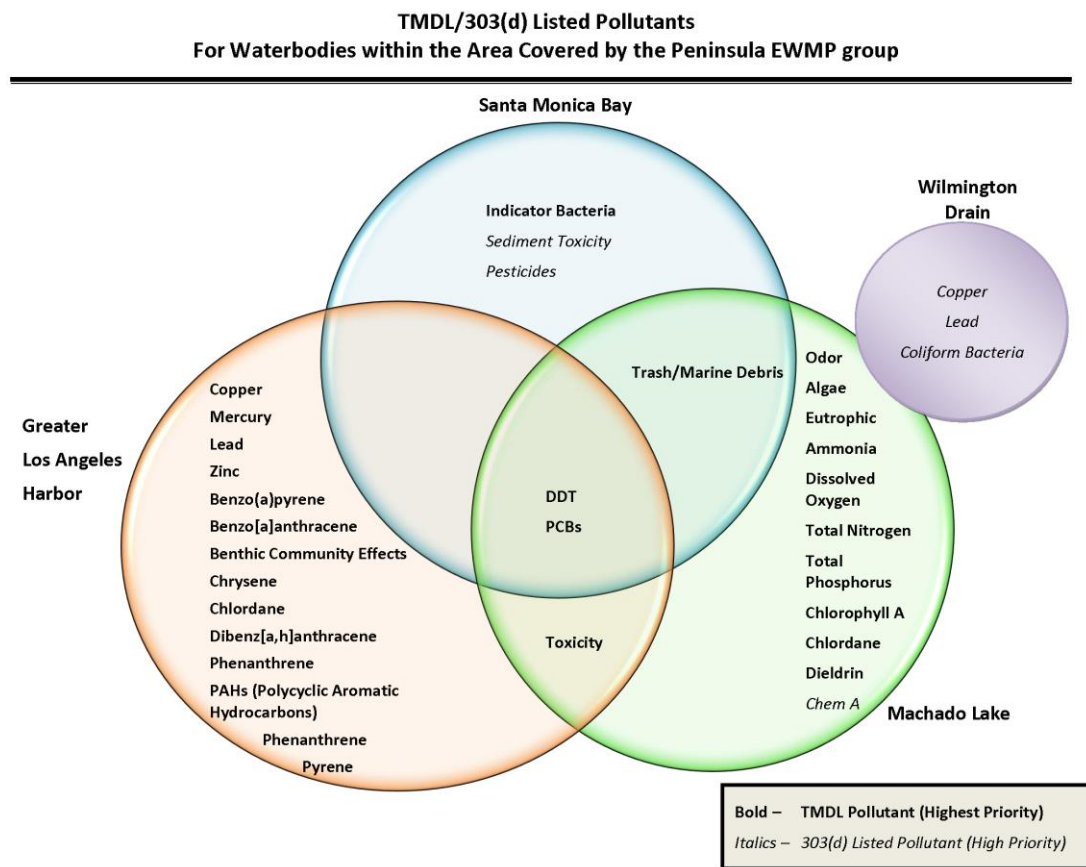


Figure 2-1: Peninsula Watershed Pollutant Venn Diagram.

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The waterbody-pollutant categories for the Peninsula EWMP Watersheds are summarized below. Unless otherwise indicated, all pollutants are associated with the water column.

Category 1A

- **Trash**– Machado Lake

Category 1B

- **Marine Debris (Trash and Plastic)** – Santa Monica Bay

Category 1C

- **PCBs (water, sediment, fish tissue)**– Machado Lake
- **DDT (water, sediment, fish tissue)**– Machado Lake
- **Chlordane (water, sediment, fish tissue)**– Machado Lake
- **Dieldrin (water, sediment, fish tissue)**– Machado Lake
- **Odor** – Machado Lake
- **Eutrophic Conditions** – Machado Lake
- **Algae** – Machado Lake
- **Nitrogen**- Machado Lake
- **Phosphorus** – Machado Lake
- **Ammonia**- Machado Lake
- **Chlorophyll a**- Machado Lake
- **Dissolved Oxygen**- Machado Lake

Category 1E

- **Copper(water and sediment)**– Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor
- **Lead (water and sediment)**– Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor
- **Mercury (water and sediment)**– Fish Harbor
- **Zinc (water and sediment)**– Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor
- **PAHs**–Inner Harbor, Outer Harbor, Cabrillo Marina, Fish Harbor
 - **Benzo(a)pyrene (water and sediment)**
 - **Chrysene (water and sediment)**
 - **Benzo[a]anthracene (water and sediment)**
 - **Dibenz[a,h]anthracene (water and sediment)**
 - **Phenanthrene (water and sediment)**
 - **Pyrene (water and sediment)**
- **DDT (water, sediment, fish tissue)**– Inner Harbor, Fish Harbor, Cabrillo Marina, Outer Harbor
- **PCBs(water, sediment, fish tissue)**– Inner Harbor, Fish Harbor, Cabrillo Marina, Outer Harbor
- **Chlordane (water and sediment)**– Fish Harbor

Category 1F

- **Bacteria (Coliform & Enterococcus)** – Santa Monica Bay
 - Dry and Wet

Category 1G (USEPA Established)

- **DDT (water, sediment, fish tissue)** – Santa Monica Bay
- **PCBs (water, sediment, fish tissue)** – Santa Monica Bay

Category 2A

- **Copper**– Wilmington Drain
- **Lead** –Wilmington Drain

Category 2B

- **Coliform Bacteria** – *Wilmington Drain*

Category 2C

- **Chem A (fish tissue)** – *Machado Lake*
- **Pesticides**–*Palos Verdes Shoreline Park*

Category 2D

- **Sediment Toxicity (sediment)**– *Santa Monica Bay Nearshore/Offshore*

The majority of data analyzed during the waterbody-pollutant categorization was collected pursuant to a TMDL (see Section 2.2: Water Quality Characterization below), and no mass emissions sampling stations exist within the Peninsula EWMP area. Therefore, most of the priority pollutants fall into the Category 1: Highest Priority classification. These pollutants will be considered with the Highest Priority within the Peninsula EWMP when determining control measures to be implemented in each watershed.

Category 2: High Priority pollutants were obtained from the State’s 303(d) List, and include five listings which are either being addressed by a TMDL or were listed in error. Section 2.2.2: Summary of Existing 303(d) Listings below describes the status of these listings. Category 2 pollutants will be considered with a High Priority within the Peninsula EWMP when determining control measures to be implemented.

There were no Category 3: Medium Priority pollutants identified during the Waterbody Pollutant Categorization; however, monitoring conducted under the Coordinated Integrated Monitoring Plan (CIMP) will be used to identify if there are additional pollutants of concern within the Peninsula EWMP watersheds.

Table 2-1 summarizes the waterbody pollutant combinations for the Peninsula Watershed Group.

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Table 2-1: Waterbody/Pollutant Classifications for the Peninsula Watershed Group.

Category	Pollutant	Waterbody							
		SMB ^(a)	ML ^(b)	WD ^(c)	IH ^(d)	OH ^(e)	CM ^(f)	FH ^(g)	SP ^(h)
1	Trash		X						
	Marine Debris	X							
	PCBs (water, sediment, fish tissue)	X	X		X	X	X	X	
	DDT (water, sediment, fish tissue)	X	X		X	X	X	X	
	Chlordane (water, sediment, fish tissue)		X					X	
	Dieldrin (water, sediment, fish tissue)		X						
	Odor		X						
	Eutrophic Conditions		X						
	Algae		X						
	Nitrogen		X						
	Phosphorus		X						
	Ammonia		X						
	Chlorophyll a		X						
	Dissolved Oxygen		X						
	Copper(water and sediment)				X	X	X	X	
	Lead (water and sediment)				X	X	X	X	
	Mercury (water and sediment)							X	
	Zinc (water and sediment)				X	X	X	X	
	PAHs				X	X	X	X	
Bacteria (Coliform & Enterococcus)	X								
2	Copper			X					
	Lead			X					
	Coliform Bacteria			X					
	Chem A (fish tissue)		X						
	Pesticides							X	
	Sediment Toxicity (sediment)	X							
3	None Identified								

- (a) Santa Monica Bay
- (b) Machado Lake
- (c) Wilmington Drain
- (d) Inner Harbor
- (e) Outer Harbor
- (f) Cabrillo Marina
- (g) Fish Harbor
- (h) Palos Verdes Shoreline Park

2.2. WATER QUALITY CHARACTERIZATION

In order to characterize existing water quality conditions in the Peninsula EWMP watersheds, and to identify pollutants of concern for prioritization per section VI.C.5.a.ii of the MS4 Permit, available data from TMDLs, the 303(d) list, and available monitoring data collected during the previous ten years were analyzed. The following source documents were utilized during the water quality characterization:

- Basin Plan Amendments
 - Santa Monica Bay Bacteria Dry and Wet Weather TMDLs
 - Santa Monica Bay Marine Debris TMDL
 - Santa Monica Bay DDT and PCBs TMDL
 - Machado Lake Trash TMDL
 - Machado Lake Pesticides and PCBs TMDL
 - Machado Lake Nutrient TMDL
 - Long Beach and Greater Los Angeles Harbor Toxics TMDL³
- Monitoring Reports and Data
 - Port of Los Angeles Ambient Water Quality Monitoring Data (2005-2008)
 - Southern California Coastal Water Research Project (SCCWRP) Bight Study (2008)
 - City of Los Angeles Machado Lake Nutrient TMDL Monitoring Data (2011-2012)
 - County of Los Angeles Machado Lake Nutrient TMDL Monitoring Data (2012)
 - Palos Verdes Peninsula Coordinated Machado Lake Nutrient TMDL Monitoring Data (2011-2012)
 - Los Angeles County Sanitation Districts Santa Monica Bay Bacteria TMDL Monitoring Data (2003-2013)
 - Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report

2.2.1. SUMMARY OF EXISTING TMDLS AND DEADLINES

TMDLs assign load allocations (LAs) and waste load allocations (WLAs) to dischargers of a pollutant to ensure that the total amount of that pollutant entering a receiving waterbody will not impair its beneficial uses. The Regional Board is required to incorporate compliance schedules into TMDLs. Applicable TMDL compliance dates were used to identify and classify Peninsula WMG pollutants as Category 1: Highest Priority Pollutants (see Section 2.2: Waterbody Pollutant Characterization). Table 2-2 shows existing TMDLs applicable to the Peninsula EWMP and Table 2-3 shows existing TMDL interim and final compliance dates.

³ As recognized by the footnote in Attachment K-4 of the MS4 Permit, the Peninsula WMG members have entered into an Amended Consent Decree with the United States and the State of California, including the Regional Board, pursuant to which the Regional Board has released the Peninsula WMG members from responsibility for Toxic pollutants in the Dominguez Channel and the Greater Los Angeles and Long Beach Harbors. Accordingly, no inference should be drawn from the submission of this EWMP Work Plan or from any action or implementation taken pursuant to it that the Peninsula WMG has waived any rights under the Amended Consent Decree.

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Table 2-2: TMDLs Applicable to the Peninsula EWMP

TMDL	Regional Board Resolution Number	Effective Date and/or Environmental Protection Agency (EPA) Approval Date
Santa Monica Bay Beaches Wet Weather Bacteria TMDL – Group 7	2002-022 Amended by R12-007	July 15, 2003 R12-007 effective July 2, 2014
Santa Monica Bay Beaches Dry Weather Bacteria TMDL – Group 7	2002-004 Amended by R12-007	July 15, 2003 R12-007 effective July 2, 2014
Santa Monica Bay Nearshore and Offshore Debris TMDL	R10-010	March 20, 2012
Machado Lake Trash TMDL	2007-006	March 6, 2008
Machado Lake Nutrient TMDL	2008-006	March 11, 2009
Machado Lake Pesticides and PCBs (Toxics) TMDL	R10-008	March 20, 2012
Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL	R11-008	March 23, 2012
Santa Monica Bay TMDL for DDTs and PCBs	EPA Established	March 26, 2012

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Table 2-3: TMDL Compliance Dates Applicable to the Peninsula EWMP

TMDL	Segments	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Compliance Milestones								
					2012	2013	2014	2015	2016	2017*	2018	2019	2020
Santa Monica Bay Beaches Bacteria	Abalone Cove	Total Coliform Fecal Coliform Enterococcus	Compliance with Total Allowable Exceedance Days	Winter	Pre 2012								
	Bluff Cove			Dry	Final								
	Inspiration Point			Summer	Pre 2012								
	Long Point			Dry	Final								
	Malaga Cove			Wet	Pre 2013								
	Portuguese Bend				Final								
Santa Monica Bay Nearshore and Offshore Debris	All	Trash Plastic Pellets	% Reduction in Trash from Baseline	Wet and Dry					3/20	3/20	3/20	3/20	3/20
									20%	40%	60%	80%	100%
Santa Monica Bay DDT and PCBs	Abalone Cove Bluff Cove Inspiration Point Long Point Malaga Cove Portuguese Bend	DDT PCBs	Meet WLAs	Wet and Dry	USEPA Established TMDL – No Implementation Schedule								
Machado Lake Trash	All	Trash	% Reduction in Trash from Baseline	Wet and Dry	3/6	3/6	3/6	3/6	3/6				
					20%	40%	60%	80%	100%				
Machado Lake Pesticides and PCBs	All	Chlordane Dieldrin PCBs DDT	Meet WLAs	Wet and Dry								9/30	
												Final	
Machado Lake Nutrient	All	Algae Total Nitrogen Total Phosphorus Ammonia Chlorophyll a Dissolved Oxygen Odor	Meet WLA	Wet and Dry				3/11				9/11	
								Interim				Final	
Long Beach and Los Angeles Harbor Toxics	Inner Harbor Fish Harbor Cabrillo Marina Outer Harbor	DDT PCBs Copper Lead Zinc Mercury PAHs Chlordane	Meet WLA	Wet and Dry	3/23								3/23
					Interim								Final

****Bold-italic*** font indicates the end of the MS4 Permit term

2.2.2. SUMMARY OF EXISTING 303(d) LISTINGS

The State 303(d) list was used to identify and classify Category 2: High Priority Pollutants (see Section 2.2: Waterbody Pollutant Characterization). Table 2-4 below summarizes waterbody pollutant combinations identified on the 2010 303(d) list that have not been addressed by a TMDL and provides notes on the status of these listings.

Table 2-4: 303(d) Listed Pollutants in Peninsula EWMP Watersheds.

Constituent	Waterbody	Notes
Chem A (Tissue)	Machado Lake	Chem A (the abbreviation for 'chemical group A') is a suite of bio-accumulative pesticides that includes chlordane and dieldrin. The 1998 303(d) listing (and subsequent listings) for Chem A was predominately based on fish tissue concentrations of chlordane and dieldrin; there was only minimal detection of other Chem A pollutants in 1983 and 1984. Chlordane and dieldrin have been recently detected in fish tissue, while other Chem A pollutants have not been detected in 25 years. Therefore, the ML Toxics TMDL addresses the Chem A pollutants (chlordane and dieldrin) that are causing this impairment ⁴ .
Pesticides	Palos Verdes Shoreline Point	Palos Verdes Shoreline Point Beach pesticides listing in the consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC) is a clerical error and should reflect DDT and PCBs and fish advisory. The 1996 Water Quality Assessment and documentation clearly identified Palos Verdes Shoreline Park Beach as being impaired due to advisories (PCBs, DDTs). This was reflected in the 1996 305(b) report but not the 1996 303(d) report. The omission of this waterbody from the 303(d) report was rectified in the 1998 report but due to a clerical error the listing was renamed pesticides even though the underlying basis of the listing was clearly the DDT and PCBs fish advisory. In fact all the beach listings for DDT and PCBs under AU 58 were based solely on the fish advisories for Santa Monica Bay and are being addressed through the Santa Monica Bay DDT and PCBs TMDL ⁵ .
Sediment Toxicity	Santa Monica Bay Nearshore/Offshore	USEPA has determined that a TMDL is not required for the Santa Monica Bay sediment toxicity listing. This determination is based on lack of toxicity in regional surveys (1994, 1998, 2003, and 2008) ⁶ .
Copper/Lead	Wilmington Drain	A September 2010 modification of the consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC) included a finding of non-impairment for copper and lead in Wilmington Drain. No water quality data are currently available for the Wilmington Drain; however, the Regional Water Resources Control Board has indicated that the impairments for copper and lead will be removed from the 303(d) list when sufficient data is available to de-list in accordance with the State Listing Policy ⁷ .
Coliform Bacteria	Wilmington Drain	N/A

⁴ Machado Lake Pesticides and PCBs TMDL

⁵ The basis for this finding is described in Section 1.1 Regulatory Background of the USEPA: Santa Monica Bay DDT and PCBs TMDL

⁶ The basis for this finding is described in Section 2.2.4 of the USEPA: Santa Monica Bay DDT and PCBs TMDL

⁷ Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

2.2.3. RECEIVING WATER CHARACTERIZATION

The Peninsula WMG area drains to three subwatersheds. Existing water quality was evaluated for each of these subwatersheds. In order to characterize the receiving waters to which the Peninsula WMG drains, available monitoring data from the past ten years was analyzed. This section is divided by subwatershed, with a summary of each receiving waterbody's existing water quality.

Since recent receiving water monitoring data are not currently available from within the Peninsula EWMP Area for pollutants not already categorized as Category 1 or 2, there were no Category 3 (Medium Priority) pollutants identified during the Waterbody Pollutant Categorization; however, monitoring conducted under the Coordinated Integrated Monitoring Plan (CIMP) will be used to identify if there are additional pollutants of concern within the Peninsula EWMP watersheds.

The beneficial uses of the EWMP WMG receiving waters as designated in the Basin Plan are summarized in Table 2-5. The beneficial use acronyms used below are defined as follows:

- **MUN** (Municipal and Domestic Supply): *Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.*
- **IND** (Industrial Service Supply): *Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.*
- **NAV** (Navigation): *Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.*
- **REC1** (Water Contact Recreation): *Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.*
- **REC2** (Non-Contact Water Recreation): *Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.*
- **COMM** (Commercial and Sport Fishing): *Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.* **MAR** (Marine Habitat): *Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).*
- **WILD** (Wildlife Habitat): *Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.*
- **BIOL** (Preservation of Biological Habitats): *Uses of water that support designated areas or habitats, such as Areas of Special Biological Significance (ASBS), established refuges, parks, sanctuaries, ecological reserves, or other areas where the preservation or enhancement of natural resources requires special protection.*

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- RARE (Rare, Threatened, or Endangered Species): *Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.*
- MIGR (Migration of Aquatic Organisms): *Uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.*
- SPWN (Spawning, Reproduction, and/or Early Development): *Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.*
- SHELL (Shellfish Harvesting): *Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.*
- WARM (Warm Freshwater Habitat): *Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.*
- WET (Wetland Habitat): *Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.*

Table 2-5: Peninsula EWMP Area Water Bodies and Beneficial Uses Designated in the Basin Plan

Water Body	MUN	IND	GWR	NAV	COMM	REC1	REC2	WARM	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET ^b
Los Angeles County Coastal Nearshore Zone		E		E	E	P	E		E	E	E ^{an}	E ^e	E ^f	E ^f	E ^{ar}	
Los Angeles County Coastal Offshore Zone		E		E	E	E	E		E	E		E ^e	E ^f	E ^f	E	
Santa Monica Bay Nearshore [^]		E		E	E	E	E		E	E	E	E ^e	E ^f	E ^f	E	
Machado Lake	P*					E	E	E		E		E				E
Coastal Streams of Palos Verdes	P*		I					I		E		E				
Canyon Streams of Palos Verdes	P*		I					I		E		E ^t				
Point Vicente Beach ⁸				E	E	E	E		E	E				P	E	
Los Angeles/Long Beach Inner Harbor		E		E	E	E	E		E			E ^e			P	
Los Angeles/Long Beach Fish Harbor		E		E	E	E	E		E			E			P	
Los Angeles/Long Beach Outer Harbor				E	E	E	E		E			E			P	

E - Existing beneficial use

P - Potential beneficial use

I - Intermittent beneficial use

* - Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date.

b - Water bodies designated as WET may have wetlands habitat associated with only a portion of the water body. Any regulatory action would require a detailed analysis of the area.

^ - Nearshore is defined as the zone bounded by the shoreline or the 30-foot depth contours, whichever is further from the shoreline. Longshore extent is from Rincon Creek to the San Gabriel River Estuary.

e - One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.

f - Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.

t - Rare applies only to Agua Magna canyon and Sepluvada Canyon areas.

an - Areas of Special Biological Significance (along coast from Latigo Point to Laguna Point) and Big Sycamore Canyon and Abalone Cove Ecological Reserves and Point Fermin Marine Life Refuge.

ar - Areas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.

⁸ Listed as Port Vicente Beach in the Basin Plan.

SANTA MONICA BAY

The Cities of Rancho Palos Verdes, Rolling Hills, Rolling Hills Estates and Palos Verdes Peninsula have areas which drain directly to Santa Monica Bay. The portion of the Peninsula WMG which drains to Santa Monica Bay consists of approximately 14 square miles, which is about 3.4% of the Santa Monica Bay Watershed (414 sq. mi.). The Santa Monica Bay is impaired for DDT, PCBs, marine debris, and bacteria.

BACTERIA

The Santa Monica Bay Beaches (SMB Beaches) were designated as impaired due to coliform bacteria and included on California's 1998 Clean Water Act (CWA) 303(d) list of impaired waters. The Regional Board issued the SMB Beaches Bacteria TMDLs (for wet and dry weather), which both became effective on July 15, 2003. To meet the requirements of these TMDLs, a SMB Beaches Bacteria TMDLs Coordinated Shoreline Monitoring Plan (CSMP) was developed by a committee of responsible agencies, including representatives from the Peninsula WMG.

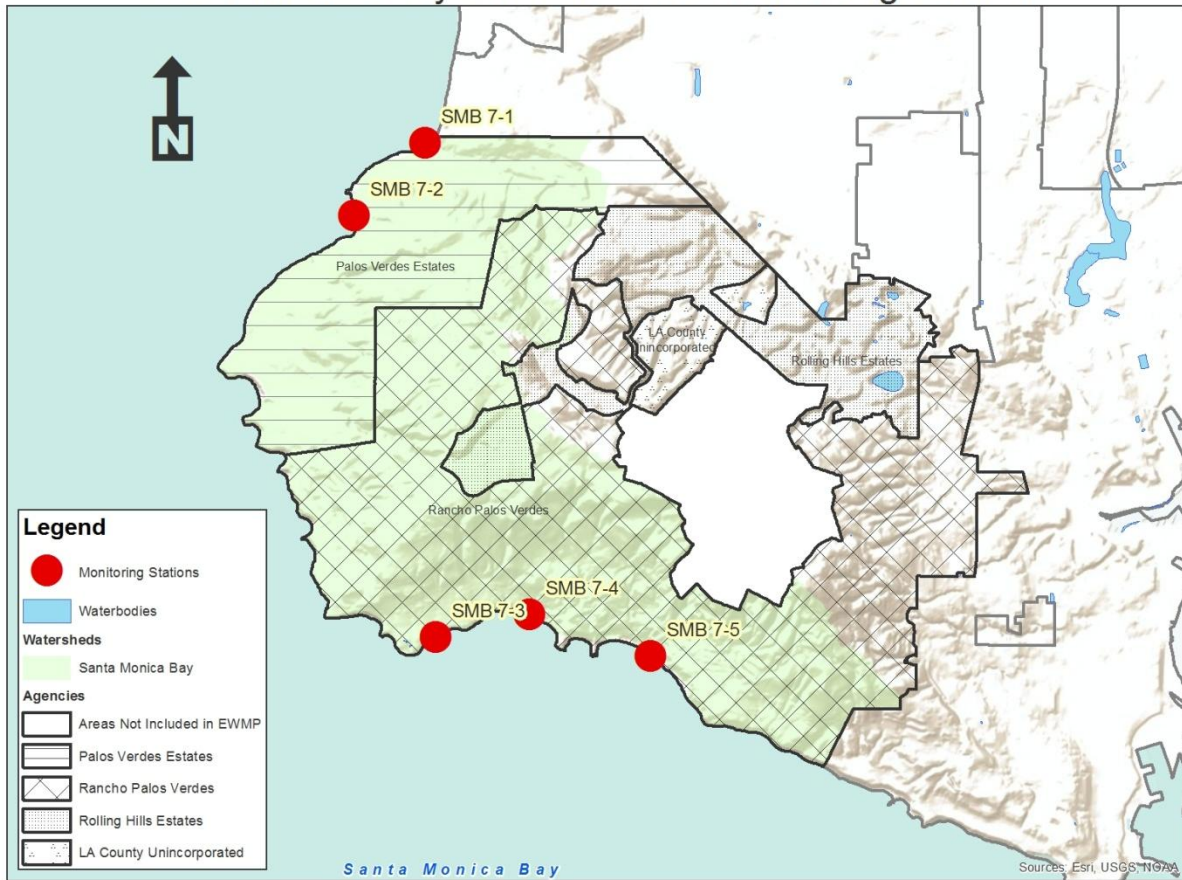
Since 2003, five CSMP sites have been sampled for indicator bacteria along the Palos Verdes Peninsula shoreline by the Los Angeles County Sanitation District (LACSD). The five CSMP sites include SMB 7-1 through 7-5 and are shown on Figure 2-2.

The TMDLs establish multi-part numeric targets based on three bacteriological parameters: Total coliform density, fecal coliform density and enterococcus density, measured in MPN/100mL. Since 2005, each site has been monitored on a weekly basis unless there is an exceedance event. On the second day following an exceedance of the water quality objectives for one or more of the bacterial parameters, an additional sample is taken at the site with the exceedance (Table 2-6). To implement the single sample bacteria objectives, and to set waste load allocations (WLAs) based on the single sample targets, the Regional Board set an allowable number of exceedance days at each shoreline monitoring site. In addition, the TMDLs divide the calendar year into three separate periods for compliance purposes, each with specific requirements. The three compliance periods are as follows:

- Summer dry-weather (April 1 – October 31),
- Winter dry weather (November 1 – March 31), and
- Wet weather (Year-round)

Table 2-6 shows the single sample water quality targets for the three indicator bacteria used to determine compliance, and Table 2-7 presents the allowable number of exceedance days at each monitoring location along the Peninsula WMG shoreline. Data collected from the CSMP are summarized in Table 2-8 and Table 2-9 below. Although there are some exceedances above the allowable exceedance days, they are infrequent (in most cases less than 3 out of 12 years have exceedance days above the allowable limit). In addition, when beach investigations have been conducted, there is no data to indicate these exceedances were caused by contributions from the MS4.

Santa Monica Bay Bacteria TMDL Monitoring Stations



Date: 5/12/2015

Figure 2-2: Santa Monica Bay Bacteria Monitoring Stations within the Peninsula EWMP area.

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Table 2-6: Single Sample Compliance Targets⁹

Constituent	Rolling 30-day Geometric Mean Limit	Single Sample Limits
Total Coliform*	1,000/100 mL	10,000/100 mL
Fecal Coliform	200/100 mL	400/100 mL
Enterococcus	35/100 mL	104/100 mL

Table 2-7: Allowable Exceedance Days^(a) per Monitoring Location¹⁰

Sampling Location	Winter Dry Weather Exceedance Days Allowed^(b)	Summer Dry Weather Exceedance Days Allowed^(c)	Wet Weather^(d) Exceedance Days Allowed^(e)
SMB 7-1 (Malaga Cove)	1	0	2
SMB 7-2 (Bluff Cove)	1	0	0
SMB 7-3 (Long Point)	1	0	1
SMB 7-4 (Abalone Cove)	0	0	1
SMB 7-5 (Portuguese Bend Cove)	1	0	1

(a) Allowable Exceedance days based on weekly sampling

(b) Final compliance beginning July 15, 2009

(c) Final compliance beginning July 15, 2006

(d) Wet weather days are those days with rain events of ≥ 0.1 inches of precipitation and the three days following the end of the rain event.

(e) Final compliance beginning July 15, 2013

⁹ City of Los Angeles and County of Los Angeles, Technical Steering Committee: Santa Monica Bay Beaches Bacterial TMDLs Coordinated Shoreline Monitoring Plan

¹⁰ Ibid.

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Table 2-8: Number of Exceedance Days per Calendar Year by Monitoring Site and Compliance Period

		SMB 7-1	SMB 7-2	SMB 7-3	SMB 7-4	SMB 7-5
2003	Wet Weather	1	0	1	0	0
	Dry Summer	1	0	1	0	0
	Dry Winter	1	0	0	0	0
2004	Wet Weather	1	2	3	2	2
	Dry Summer	2	1	0	0	2
	Dry Winter	1	1	0	0	0
2005	Wet Weather	3	1	8	4	3
	Dry Summer	0	0	0	1	0
	Dry Winter	0	0	0	0	3
2006	Wet Weather	1	0	2	0	1
	Dry Summer	0	0	0	0	0
	Dry Winter	1	0	0	0	0
2007	Wet Weather	0	0	0	0	0
	Dry Summer	0	0	0	0	0
	Dry Winter	0	0	0	0	0
2008	Wet Weather	1	0	0	0	0
	Dry Summer	0	0	0	0	0
	Dry Winter	0	0	0	0	1
2009	Wet Weather	1	0	1	0	1
	Dry Summer	0	0	0	0	1
	Dry Winter	0	0	0	1	0
2010	Wet Weather	1	0	0	3	3
	Dry Summer	0	0	1	0	0
	Dry Winter	0	0	0	0	0
2011	Wet Weather	0	0	0	0	0
	Dry Summer	2	0	0	0	2
	Dry Winter	0	0	1	0	0
2012	Wet Weather	0	0	0	0	0
	Dry Summer	0	0	1	0	0
	Dry Winter	0	0	2	0	0
2013	Wet Weather	0	0	0	0	0
	Dry Summer	0	1	1	0	0
	Dry Winter	0	0	2	0	0
2014	Wet Weather	0	0	0	0	0
	Dry Summer	0	0	0	0	0
	Dry Winter	0	0	0	0	0
2015	Wet Weather	0	0	2	0	0
	Dry Summer	0	0	0	0	0
	Dry Winter	0	0	0	0	0

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Table 2-9: Percentage of Calendar Years in Compliance with Allowable Exceedance Days by Compliance Period

	Percentage of Years in Compliance with Allowable Exceedance Days for Winter Dry Weather*	Percentage of Years in Compliance with Allowable Exceedance Days for Summer Dry Weather*	Percentage of Years in Compliance with Allowable Exceedance Days for Wet Weather*
SMB 7-1	100%	92%	100%
SMB 7-2	100%	92%	100%
SMB 7-3	83%	75%	92%
SMB 7-4	100%	100%	100%
SMB 7-5	100%	83%	100%

*Data analyzed from 1/1/2003 – 12/31/2015. Exceedance days occurring before final compliance deadlines were considered in compliance.

The rare dry weather exceedances of the bacterial objectives at SMB 7-1, 7-3, and 7-5 shown in Table 2-9 are likely attributed to natural causes, including, but not limited to: the presence of recreational swimmers, ocean debris, birds, animal carcasses (i.e. birds, marine mammals, etc.), heavy surf, increased wave height, and wind speed. Site SMB 7-3 is also directly adjacent to the Terranea Resort in Rancho Palos Verdes, which subsequently increases the ocean users and generated pollutants. The City of Rancho Palos Verdes has been in correspondence with the Terranea Resort to solve BMP maintenance issues onsite. Furthermore, all five sites within the Peninsula WMG are 100% in compliance with wet weather limits during the same time period. These factors suggest that the MS4 is likely not causing or contributing to dry weather exceedances.

Additionally, the Peninsula WMG sites are in an anti-degradation condition¹¹. The Peninsula WMG monitoring sites historically experience fewer exceedance days than the reference beach (Leo Carrillo) used in the TMDL (see Table 2-10 thru Table 2-12). This is consistent with the TMDL’s approach that acknowledges that historic average wet weather bacteria exceedance rates for each of these subwatersheds are lower than that of the reference beach. Historic wet weather monitoring data (2005 – 2014) at these five sampling locations confirms this understanding, as the long-term exceedance rate at all five sites varies between 4 and 10%, well below the long-term wet weather exceedance rate at the reference beach (26%). In addition, Heal the Bay, which comprehensively analyzes coastline water quality in California, assigning A to F grades based on bacteria-related health risks, consistently awards these beaches an “A+” ranking on its Beach Report Card (Heal the Bay, 2015).

Table 2-10: Winter Dry Weather Exceedance Days SMB 7-1 thru 7-5 Compared with Reference Beach (SMB 1-1) After Final Compliance Deadline Beginning July 15, 2009.

	SMB 7-1	SMB 7-2	SMB 7-3	SMB 7-4	SMB 7-5	Reference Beach
2009	0	0	0	0	0	2
2010	0	0	0	0	0	3
2011	0	0	1	0	0	4
2012	0	0	2	0	0	3
2013	0	0	2	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0

¹¹ The antidegradation policy applies to waters that are determined to have high water quality and requires that existing high quality be maintained.

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Table 2-11: Summer Dry Weather Exceedance Days SMB 7-1 thru 7-5 Compared with Reference Beach (SMB 1-1) After Final Compliance Deadline Beginning July 15, 2006.

	SMB 7-1	SMB 7-2	SMB 7-3	SMB 7-4	SMB 7-5	Reference Beach
2006	0	0	0	0	0	11
2007	0	0	0	0	0	0
2008	0	0	0	0	0	2
2009	0	0	0	0	1	0
2010	0	0	1	0	0	0
2011	2	0	0	0	2	5
2012	0	0	1	0	0	0
2013	0	1	1	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	1 ^(a)

^(a) Summer 2015 data for reference beach shown through June 2015

Table 2-12: Wet Weather Exceedance Days SMB 7-1 thru 7-5 Compared with Reference Beach (SMB 1-1) After Final Compliance Deadline Beginning July 15, 2013.

	SMB 7-1	SMB 7-2	SMB 7-3	SMB 7-4	SMB 7-5	Reference Beach
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	2	0	0	1

Although it is unlikely that the MS4 is causing or contributing to bacteria exceedances, the RAA estimates an additional 10.3-12.6% reduction by 2021 in bacteria loading during wet weather based on implementation of various nonstructural BMPs, Low Impact Development (LID) ordinances, and a downspout disconnection programs for single family residential homeowners. Although it has not been quantified through the RAA, these control measures will also address dry weather conditions. Additional actions to reduce loading during dry weather will include: execution of the non-stormwater screening and monitoring program (already underway) and implementation of the active illicit discharge identification program required by the new MCMs.

PCBs AND DDT

Concentrations of DDT and PCBs in the surface sediments of the Santa Monica Bay have decreased substantially since the early 1970s; however, they are still present at levels of concern for bioaccumulation and human health¹². The MS4 Permit requires routine stormwater sampling at mass emissions stations throughout LA County. Sampling is conducted by the Los Angeles County Flood Control District, and typically includes four wet-weather events and four dry-weather events per year at these mass emission stations. In the Santa Monica Bay Watershed, the Ballona Creek and Malibu Creek mass emission stations are the two closest to the Peninsula EWMP area. Neither of these stations has detected DDT or PCBs since the mid-90s¹³.

The US EPA issued the Santa Monica Bay DDT and PCBs TMDL in 2012. In order to estimate stormwater loading of these pollutants to the Santa Monica Bay, a study by Curren et al. (2011) was used along with data collected by the City of Los Angeles from 2007-2010. Estimated stormwater loads from Santa Monica Bay watersheds were found to be lower than TMDL calculated allowable loads to achieve

¹² USEPA: Santa Monica Bay DDT and PCBs TMDL

¹³ According to the Santa Monica Bay DDT and PCBs TMDL, there were no detectable concentrations of DDT in stormwater samples from 1994 to 2005 (LADPW, 2005). Similar results were found for DDT in Malibu (1997 to 2005); Los Angeles Department of Public Works (LADPW) has not indicated detectable levels of PCBs in stormwater from Ballona or Malibu since the mid 1990s. The detection levels used in the LA County Mass Emission sampling are 2 & 3 orders of magnitude larger than the California Ocean Plan human health criteria for DDT and PCBs respectively.

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sediment targets; therefore, the waste load allocations for DDT and PCBs are based on existing load estimates, and the MS4 dischargers are essentially in an anti-degradation condition¹⁴.

The Peninsula EWMP area drains to the Palos Verdes Shelf portion of Santa Monica Bay, which is an active EPA Superfund site that is subject to Superfund Remedial Action Objectives (RAOs)¹⁵. These RAOs include institutional controls, natural recovery, capping, and monitored attenuation, and are expected to result in improved water quality and compliance with EPA established numeric targets for DDT and PCBs in the Santa Monica Bay.

MARINE DEBRIS

The 1998, 2002, and 2006 303(d) lists include debris as an impairment to beneficial uses in the Santa Monica Bay. On October 16, 2008 and August 10, 2009, Regional Board staff conducted site visits along the beaches in the southern and northern parts of the Santa Monica Bay, respectively, to document the trash problem, and subsequently issued the Santa Monica Bay Nearshore and Offshore Marine Debris TMDL, which went into effect on Mar 20, 2012. Compliance with the Santa Monica Bay Debris TMDL is based on installation of structural best management practices such as full capture or partial capture systems, institutional controls, or any best management practices, to attain a progressive reduction in the amount of trash in the Santa Monica Bay¹⁶. The agencies within the Peninsula WMG have chosen to comply through the installation of full capture devices in catch basins draining to Santa Monica Bay. These devices are being installed in accordance with the compliance schedule outlined in the TMDL¹⁷.

MACHADO LAKE

The Peninsula WMG areas do not drain directly into Machado Lake. Drainage from the Peninsula WMG areas exit the Peninsula in an easterly or northeasterly direction where it is comingled with drainage from the cities of Torrance and Lomita prior to flowing into three of the four major drainage systems entering Machado Lake (Wilmington Drain, Project 77 and Project 510). The portion of the Peninsula WMG which contributes runoff to Machado Lake consists of approximately 5 square miles, which is about 22% of the Machado Lake Subwatershed drainage area (approximately 22.6 sq. mi. total). Machado Lake is impaired for toxics, nutrients, and trash.

The Peninsula WMG agencies contribute runoff to the Wilmington Drain, Project 77, and Project 510 storm drain lines (Figure 2-3). Over 80% of the Machado Lake Subwatershed drains to Machado Lake through Wilmington Drain. Wilmington Drain is listed on the State's 303(d) List for copper, lead and coliform bacteria. However, the Regional Board has indicated non-impairment for copper and lead, and these constituents will be removed from the 303(d) list when sufficient data is available to de-list in accordance with the State Listing Policy.¹⁸

¹⁴ USEPA: Santa Monica Bay DDT and PCBs TMDL

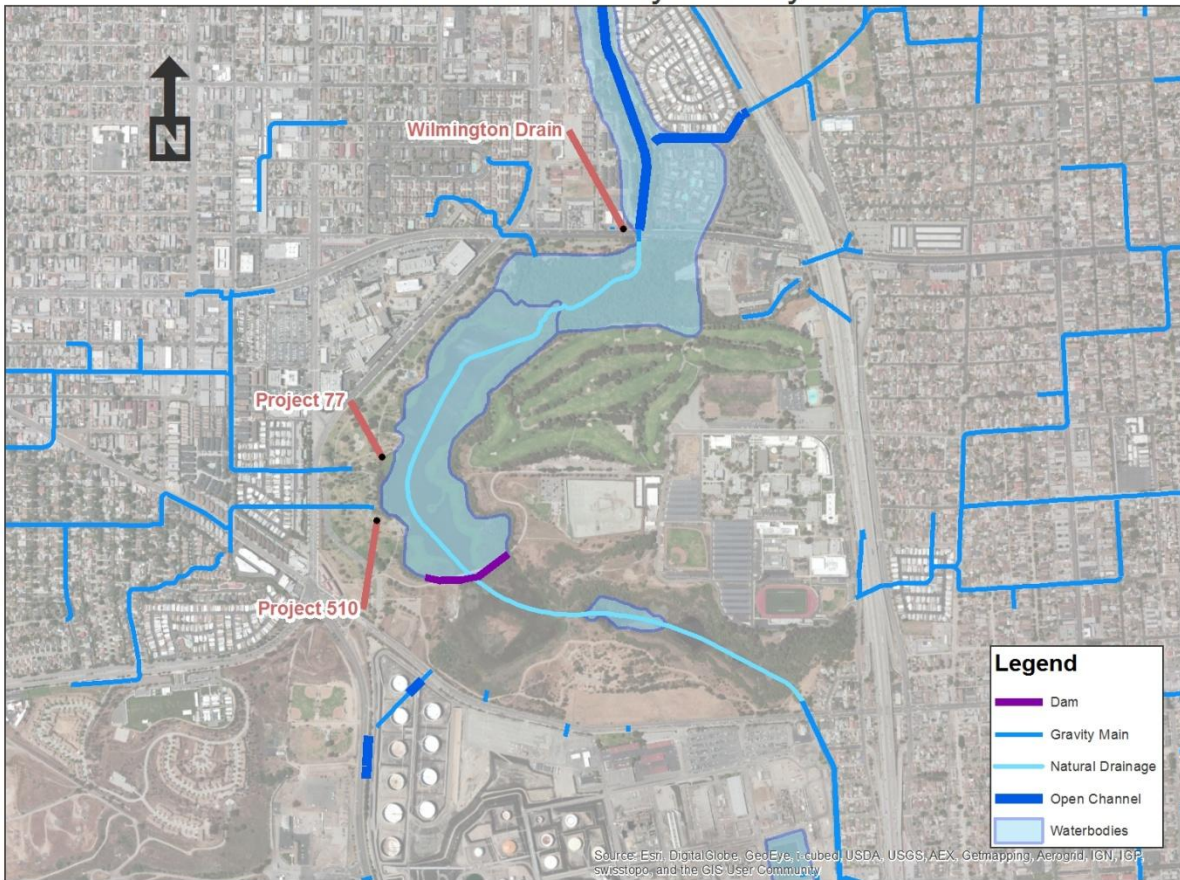
¹⁵ Ibid.

¹⁶ Santa Monica Bay Nearshore and Offshore Marine Debris TMDL

¹⁷ Subject to modifications resulting from the adoption of the statewide amendment.

¹⁸ Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

Machado Lake Conveyance Systems



Date: 4/28/2015

Figure 2-3: Storm Drains Entering Machado Lake

NUTRIENTS

Machado Lake is identified on the State's 303(d) list of impaired water bodies due to eutrophic conditions, algae, ammonia, and odors. These impairments are caused by excessive loading of nutrients, including nitrogen and phosphorus, to the lake. To address these impairments, the Regional Board issued the Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL, which became effective March 11, 2009.

In 2011, the City of LA commenced a nutrient monitoring program in Machado Lake in compliance with the Machado Lake Nutrient TMDL. Water samples are collected bi-weekly from two monitoring sites (ML-1 and ML-2) located in the open water portion of the lake, one at the northern end and one at the southern end (see Figure 2-4 and Figure 2-5)¹⁹. In addition, in-situ parameters are measured at the time of sample collection. Sampling results are averaged from the two sampling locations when assessing compliance with the load allocations (LAs) and attainment of numeric targets²⁰.

In 2011, monthly average concentrations of total nitrogen were in compliance with the 1st interim limit of 3.50 mg/L, and total phosphorus had two exceedances of the 1st interim limit of 1.25 mg/L. These exceedances occurred during the summer months of July and August. Ammonia did not exceed the final numeric target of 2.15 mg/L in any sample. The final numeric target for Chlorophyll-a (20 µg/L, monthly average) was exceeded in the months of June, July, August and September with the average concentrations of 22.0 µg/L, 48.5 µg/L, 81.5 µg/L and 29.75 µg/L, respectively. Chlorophyll-a concentration varied greatly with lake depth. In 2012, total nitrogen and total phosphorus concentrations were all in compliance with the 1st interim WLA²¹. Table 2-13 presents numeric targets and interim and final WLAs and LAs for Machado Lake.

¹⁹ For more information on the Machado Lake receiving water monitoring, see the Dominguez Channel Watershed Management Area Coordinated Integrated Monitoring Plan.

²⁰ City of Los Angeles Bureau of Sanitation Watershed Protection Division: Machado Lake Nutrients TMDL Annual Report 2011 (#240)

²¹ City of Los Angeles Bureau of Sanitation Watershed Protection Division: Machado Lake Nutrients TMDL Annual Reports 2011 and 2012 (#240 and #241)

Palos Verdes Peninsula

Enhanced Watershed Management Program

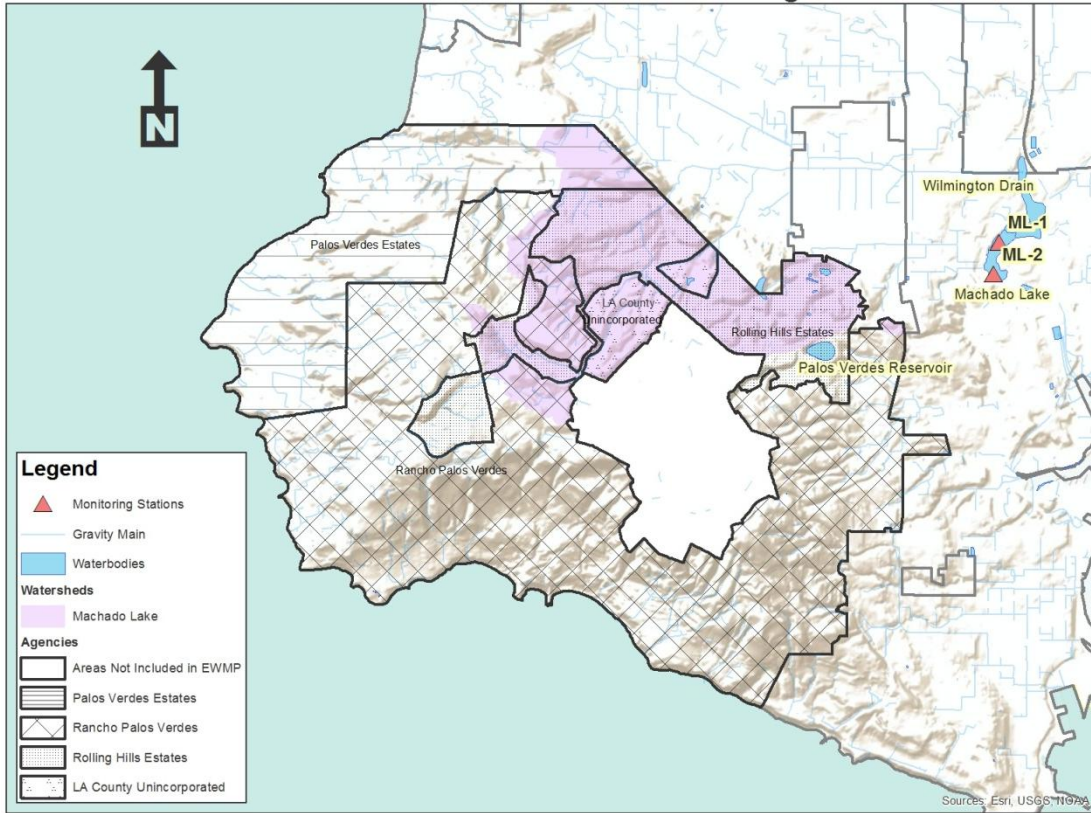


Figure 2-4: Machado Lake Nutrient TMDL Monitoring Stations

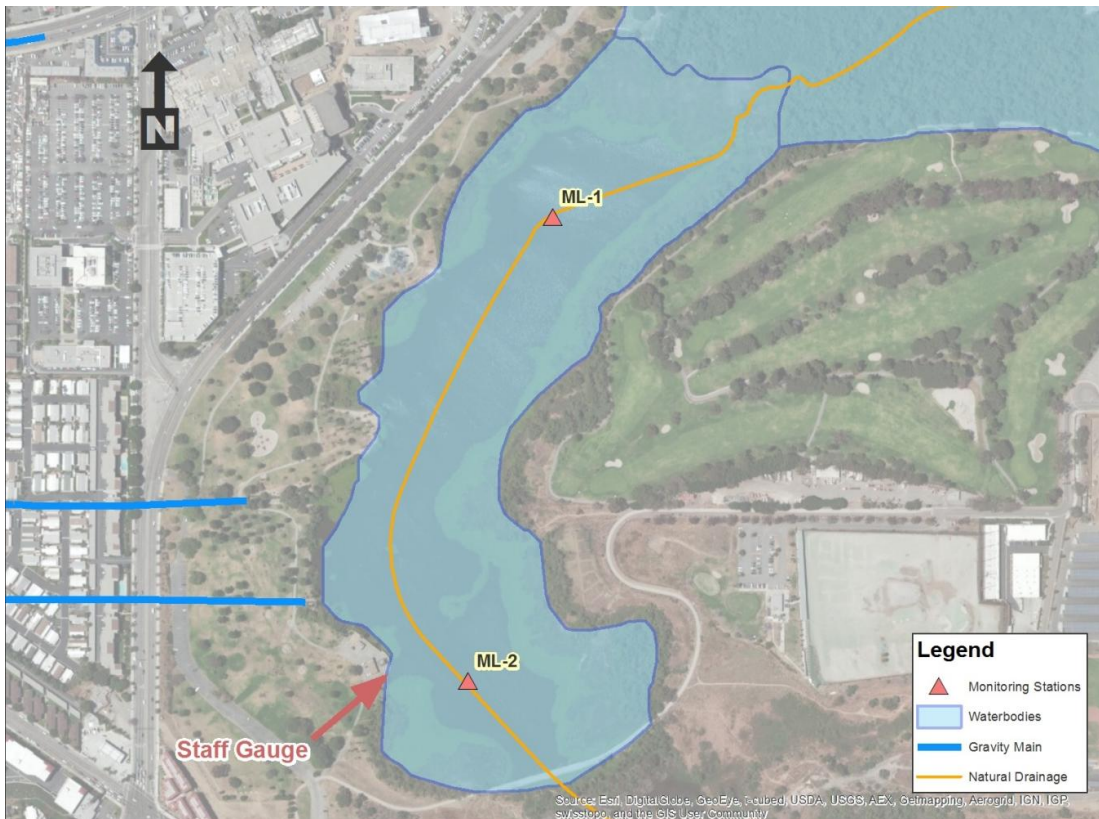


Figure 2-5: Machado Lake Monitoring Stations

Table 2-13: Nutrient TMDL Numeric Targets and Load Allocations for Machado Lake

Compliance Date	Numeric Target	WLAs and LAs (Average Concentration)
March 11, 2009 (1st Interim)	-	<u>Total Phosphorus</u> 1.25 mg/L <u>Total Nitrogen</u> 3.5 mg/L
March 11, 2014 (2nd Interim)	-	<u>Total Phosphorus</u> 1.25 mg/L <u>Total Nitrogen</u> 2.45 mg/L
September 11, 2018 (Final)	<u>Total Phosphorus</u> 0.1 mg/L (monthly average) <u>Total Nitrogen</u> 1.0 mg/L (monthly average) <u>Ammonia</u> 5.95 mg/L (hourly average) 2.15 mg/L (30-day average) <u>Dissolved Oxygen</u> * 5 mg/L (single sample minimum) *Measured at 0.3-m above the sediment) <u>Chlorophyll-a</u> 20 µg/L (monthly average)	<u>Total Phosphorus</u> 0.1 mg/L <u>Total Nitrogen</u> 1.0 mg/L

TOXICS

Machado Lake is identified on the State’s 1998, 2002, 2006, and 2008 Clean Water Act 303(d) lists of impaired water bodies as impaired due to chlordane, DDT, dieldrin, Chem A, and PCBs in tissue²². The Machado Lake Pesticides and PCBs TMDL was issued to address these impairments and became effective March 20, 2012. The Peninsula WMG will address these constituents in the Peninsula EWMP and CIMP.

TRASH

Machado Lake is identified on the State’s 1996, 1998, and 2002 Clean Water Act 303(d) lists of impaired water bodies as impaired due to trash²³. Consequently, the Regional Board issued the Machado Lake Trash TMDL, which became effective March 6, 2008. There are two alternatives for responsible jurisdictions to achieve compliance with waste load allocations in the Machado Lake Trash TMDL, either implement full capture systems or implement a Minimum Frequency of Assessment and Collection (MFAC) program. The agencies within the Peninsula WMG have chosen to comply through the installation of full capture devices in catch basins draining to Machado Lake. These devices are being installed in accordance with the compliance schedule outlined in the TMDL.

²² Machado Lake Pesticides and PCBs TMDL

²³ Machado Lake Trash TMDL

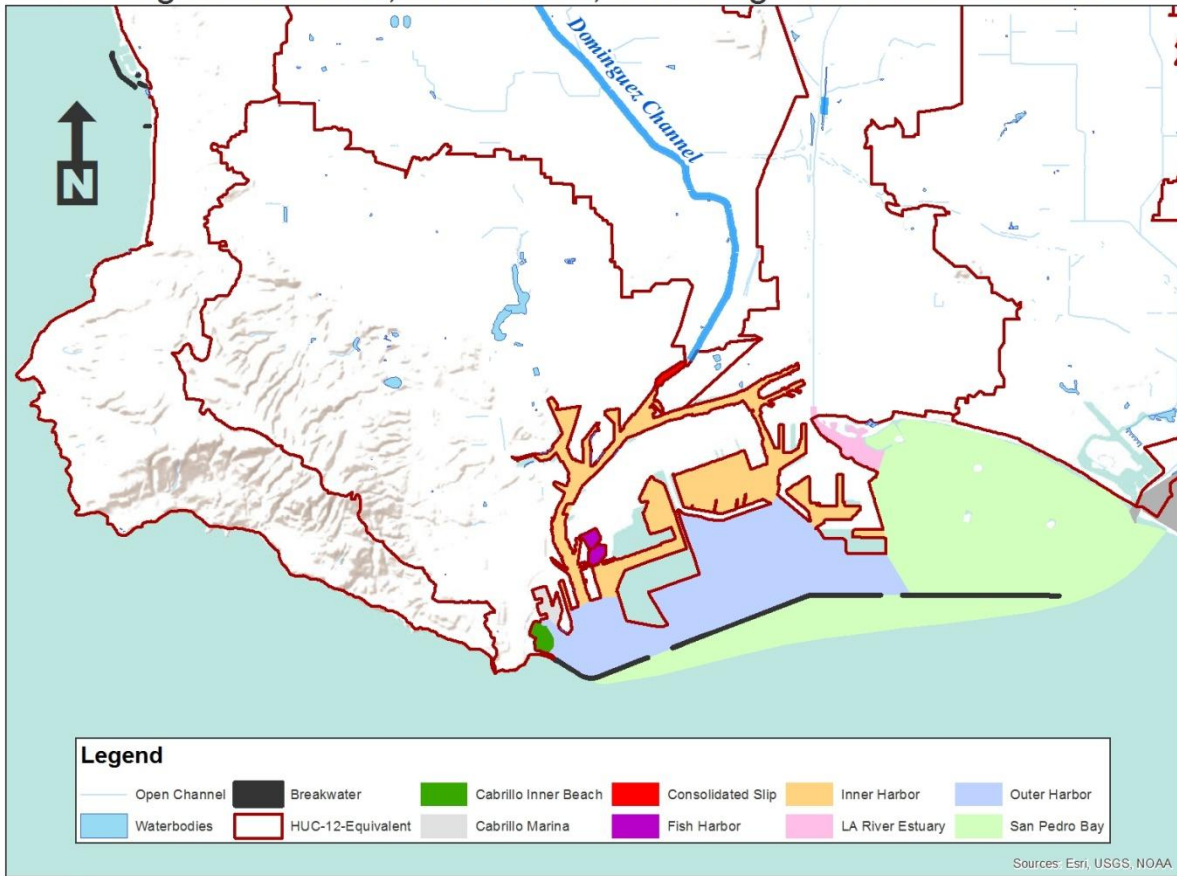
GREATER LOS ANGELES HARBOR

The Peninsula WMG areas do not drain directly into the Greater Los Angeles Harbor. Drainage from the Peninsula EWMP area exits the cities of Rancho Palos Verdes and Rolling Hills Estates in an easterly or southeasterly direction and becomes comingled with discharge from the City of LA. The portion of the Peninsula EWMP area which contributes runoff to Greater Los Angeles Harbor consists of approximately 3.4 square miles, which is about 3.1% of the Dominguez Channel Watershed Management Area (approximately 109.4 sq. mi. total) that drains to the Los Angeles Harbor²⁴. Specific Los Angeles Harbor water segments to which the Peninsula WMG contributes runoff include the Inner and Outer Harbor, Fish Harbor, and Cabrillo Marina (Figure 2-6). These segments are impaired by heavy metals and organic pollutants including copper, mercury, lead, zinc, chlordane, and certain Polycyclic Aromatic Hydrocarbons (PAH) compounds. These impairments exist in the water, sediments and fish tissue within the Los Angeles Harbor waters. Fish consumption advisories also currently exist for DDT and PCBs in certain fish species in all of the Los Angeles Harbor waters.

Water quality data was unavailable during the development of this EWMP; however, reports summarizing monitoring efforts in Los Angeles Harbor waters were reviewed. The most recent water quality collection efforts in the Los Angeles Harbor water segments collecting drainage from the Peninsula EWMP area are summarized below.

²⁴ Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

Dominguez Channel, Greater LA, and Long Beach Harbor Waters



Date: 5/19/2015

Figure 2-6: Dominguez Channel, Greater LA, and Long Beach Harbor Waters

PORT OF LOS ANGELES (POLA)/PORT OF LONG BEACH (POLB) WATER QUALITY SEDIMENT TOXICITY

In 2005, the Los Angeles and Long Beach Harbors initiated enhanced ambient water quality monitoring programs at 30 open-water sampling stations throughout the harbors. Seven monitoring events were conducted from 2005-2008, during which POLA collected mid-water column samples at a minimum of 30 locations. Figure 2-7 shows the locations of the harbor-wide monitoring stations. The seven collection events took place at different times during the year, and included dry and wet weather sampling.

Three samples in the 2005 – 2008 survey exceeded California Toxics Rule (CTR) water quality criteria for dissolved copper in POLA waters: two samples in the Cabrillo Marina region and one sample in Fish Harbor exceeded the CTR chronic criteria of 3.1 ppb, and the concentration in one sample from the Cabrillo Marina (9.91ppb) was over twice the CTR acute criteria of 4.8 ppb²⁵. For most other metals, maximum concentrations throughout the harbor complex were within the CTR chronic criterion for that metal during the course of the study. Cabrillo Marina and Fish Harbor are both semi-enclosed areas with low water circulation where multiple vessels are berthed. The dissolved copper concentrations observed in these locations may be associated with antifouling boat paints which contain copper. The California Department of Pesticide Regulation is currently evaluating alternatives to copper-containing bottom paints for boats²⁶.

The concentrations of organic chemicals were generally below detection level during this study. Detected concentrations for all but one chemical were always below relevant CTR Criteria for the Protection of Saltwater Aquatic Life for chronic exposure. Tributyltin (TBT) was detected in 7 of the 234 samples analyzed for TBT at concentrations that exceeded published National Ambient Water Quality Criteria chronic exposure limit; however, there is no California standard for this pollutant. TBT is a common chemical used in boat anti-fouling paints, and therefore the MS4 is not likely to be a source of TBT.

Of the various chlorinated pesticides (chlordane, dieldrin, and DDT and its metabolites), DDE was detected in only one of more than 100 samples analyzed using routine analytical techniques. PCBs were not detected in POLA waters relevant to the Peninsula EWMP during this study.

PAHs were not detected in any samples during the course of this study when using the standard analytical method. However, PAHs were detected in most samples when the use of a new ultra-low-detection-limit analytical method was employed.

²⁵ AMEC Earth & Environmental, Inc. 2009. Harbor Ambient Water Quality Summary in Support of the Port of Los Angeles and Port of Long Beach Water Resources Action Plan

²⁶ Ibid.

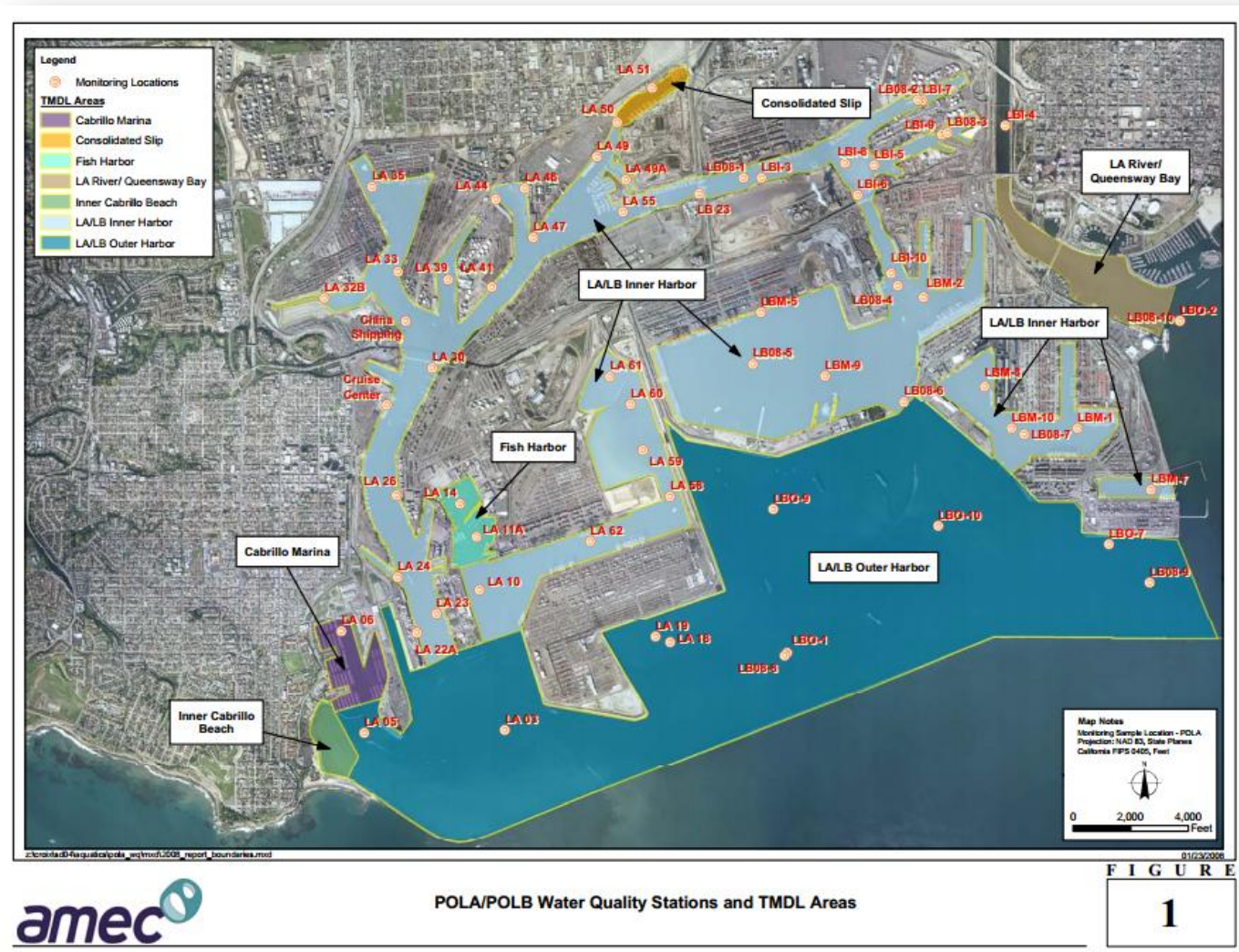


Figure 2-7: Ports of LA and LB Water Quality Monitoring Stations

SOUTHERN CALIFORNIA BIGHT SEDIMENT TOXICITY (2008)

Every five years, the Southern California Bight Regional Monitoring Program led by the Southern California Coastal Water Research Project (SCCWRP), City of Los Angeles, Los Angeles County Sanitation Districts, and Orange County Sanitation District collects samples in offshore waters and coastal embayments (estuaries, marinas, ports, and other bay areas) between Point Conception, California, and the United States-Mexico border. Two hundred and twenty-two sites (220) were sampled between July 1 and September 30, 2008, of which six (6) were in Los Angeles Harbor waters relevant to the Peninsula WMG. Two types of toxicity tests were used in this study. A 10-day solid phase sediment toxicity test using the amphipod *Eohaustorius estuarius* was conducted on all samples. A second test, a sediment water interface (SWI) test using mussel embryos, was also conducted on all embayment samples, including those sites in the Los Angeles Harbor. The responses to these tests were classified into categories consistent with California Sediment Quality Objectives. Results were classified as “Nontoxic,” “Low Toxicity,” “Moderate Toxicity,” or “High Toxicity”. All of the stations in the Los Angeles Harbor waters relevant to the Peninsula EWMP were classified as either “Nontoxic” or “Low Toxicity” in this study²⁷.

2.2.4. CHARACTERIZATION OF STORMWATER AND NON-STORMWATER DISCHARGE QUALITY

In order to begin to identify the sources of pollutants identified in the Waterbody Pollutant Categorization and prioritize implementation measures to address them, an analysis of stormwater and non-stormwater discharges from the MS4 was conducted.

MACHADO LAKE NUTRIENT TMDL MONITORING

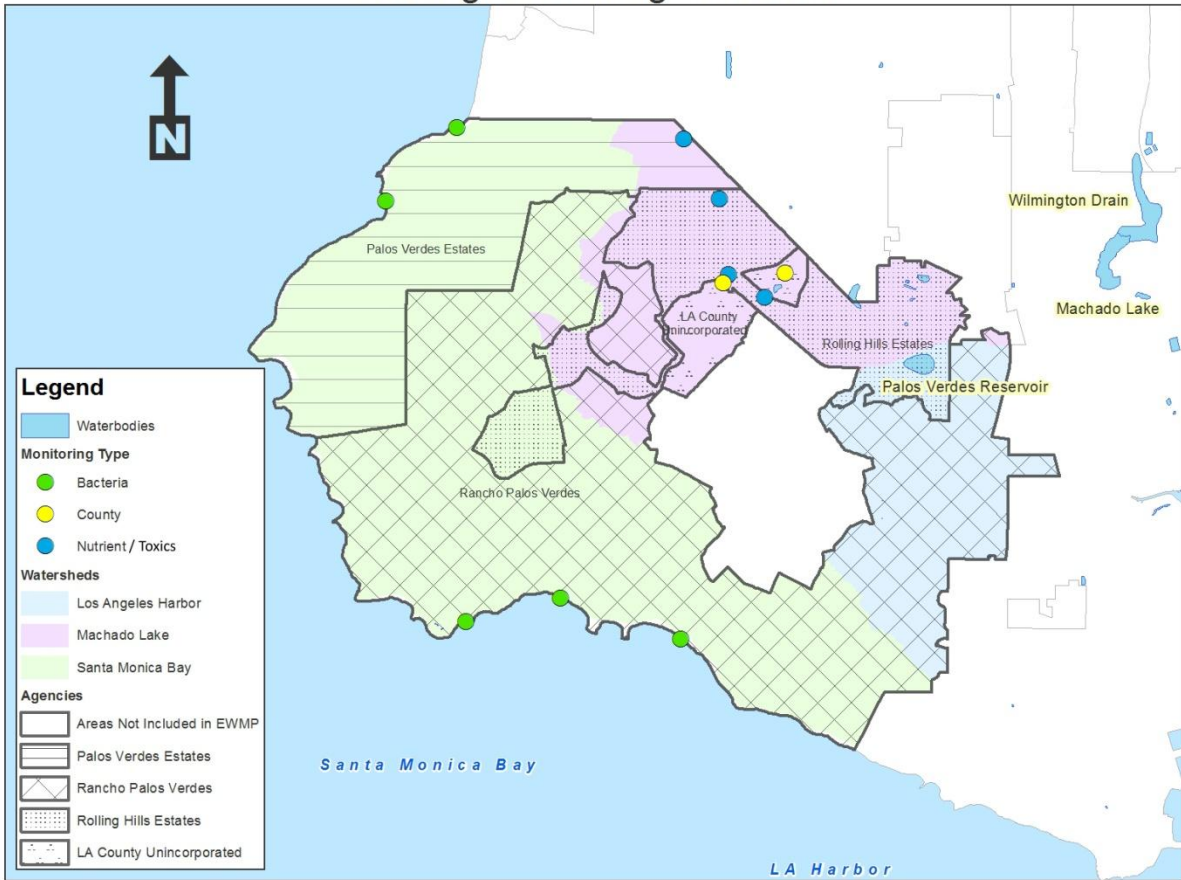
Two nutrient monitoring programs are currently taking place within the Peninsula EWMP area in compliance with the Machado Lake Nutrient TMDL. These monitoring programs, along with a summary of available data are included below.

PALOS VERDES PENINSULA NUTRIENT COORDINATED MONITORING PROGRAM (NUTRIENT CMP)

Beginning in 2011, the cities of Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates have conducted a Nutrient Coordinated Monitoring Program at four outfall locations that ultimately drain to Machado Lake. This monitoring program is conducted in compliance with the Machado Lake Nutrient TMDL. The monitoring locations are shown in Figure 2-8 as “nutrient” and were chosen because they are representative of the drainage from each of the Cities’ land uses on the Peninsula tributary to Machado Lake. The Peninsula agencies chose to demonstrate compliance with the TMDL through concentration based water quality sampling. This sampling is conducted monthly and the results of all samples collected during the month (wet and dry) are averaged to obtain a monthly nitrogen average and a monthly phosphorus average. These average values are then compared against Waste Load Allocations set forth in the Machado Lake Nutrient TMDL.

²⁷ Bay, Steven M., Darrin J. Greenstein, Matthew Jacobe, Carlita Barton, Ken Sakamoto, Diana Young, Kerry Ritter, Kenneth C. Schiff. 2011. Southern California Bight 2008 Regional Monitoring Program: I. Sediment Toxicity. Southern California Coastal Water Research Project

Existing Monitoring Locations



Date: 4/28/2015

Figure 2-8: Peninsula EWMP Area and Existing Monitoring Locations

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Three seasons of monitoring have been completed thus far (2011-12, 2012-13, and 2013-14). Between August 2, 2011 and October 15, 2012 (2011-12 season) fifteen months of sampling was conducted. This included twenty-two discrete stormwater sampling events, consisting of twenty dry weather sampling events and two wet weather sampling events²⁸.

From July 1, 2012 through June 30, 2013 (2012-2013 season), a total of twelve months of sampling was conducted. A total of fifteen discrete stormwater sampling events were collected, consisting of thirteen dry weather sampling events, and two wet weather sampling events.

Table 2-14 summarizes the data collected from 2011-2013 and demonstrates that drainage from the Peninsula meets 1st and 2nd interim TMDL compliance targets. As mentioned earlier, in-lake monitoring demonstrates that Machado Lake itself is not meeting the 1st interim targets (3.5 mg/L for Total N and 1.25 mg/L for Total P) during the summer months; however, the Peninsula WMG discharges have met the 2nd interim targets (2.45 mg/L for Total N and 1.25 mg/L for Total P) even during the critical summer dry weather period.

Table 2-14: Percentage of Nutrient CMP Average Monthly Total N and Total P Concentrations Exceeding TMDL WLAs for the Period August 2, 2011 through June 30, 2013

Constituent	% Monthly Averages Exceeding 1 st Interim TMDL WLA (3/11/09)*	% Monthly Averages Exceeding 2 nd Interim TMDL WLA (3/11/14)**	% Monthly Averages Exceeding Final TMDL WLA (9/11/18)***
Total Nitrogen	0%	0%	22%
Total Phosphorus	0%	0%	91%

- * Samples are averaged over the course of a month to achieve a monthly average concentration, which is then compared to TMDL WLAs. Dry and wet weather samples are both included in the average calculation. The Machado Lake Nutrient TMDL 1st Interim WLAs for Total N and Total P are 3.5 and 1.25 mg/L respectively
- ** The Machado Lake Nutrient TMDL 2nd Interim WLAs for Total N and Total P are 2.45 and 1.25 mg/L respectively
- *** The Machado Lake Nutrient TMDL Final WLAs for Total N and Total P are 1 and 0.1 mg/L respectively

COUNTY OF LOS ANGELES NUTRIENT MONITORING PROGRAM

The Unincorporated County commenced a nutrient monitoring program in compliance with the Machado Lake Nutrient TMDL in June 2012. The Unincorporated County elected and received approval to implement a mass-based approach to measure compliance with the Machado Lake Nutrients TMDL. The program consists of monitoring at all three County Unincorporated land islands in the Machado Lake watershed and determining the Unincorporated County’s annual contribution of nutrients to the receiving water. Two of the three County islands lie within the Peninsula EWMP area. Figure 2-9 shows the County’s water quality and flow monitoring stations within the Peninsula EWMP area.

²⁸ Machado Lake Nutrient TMDL Annual Report 2012

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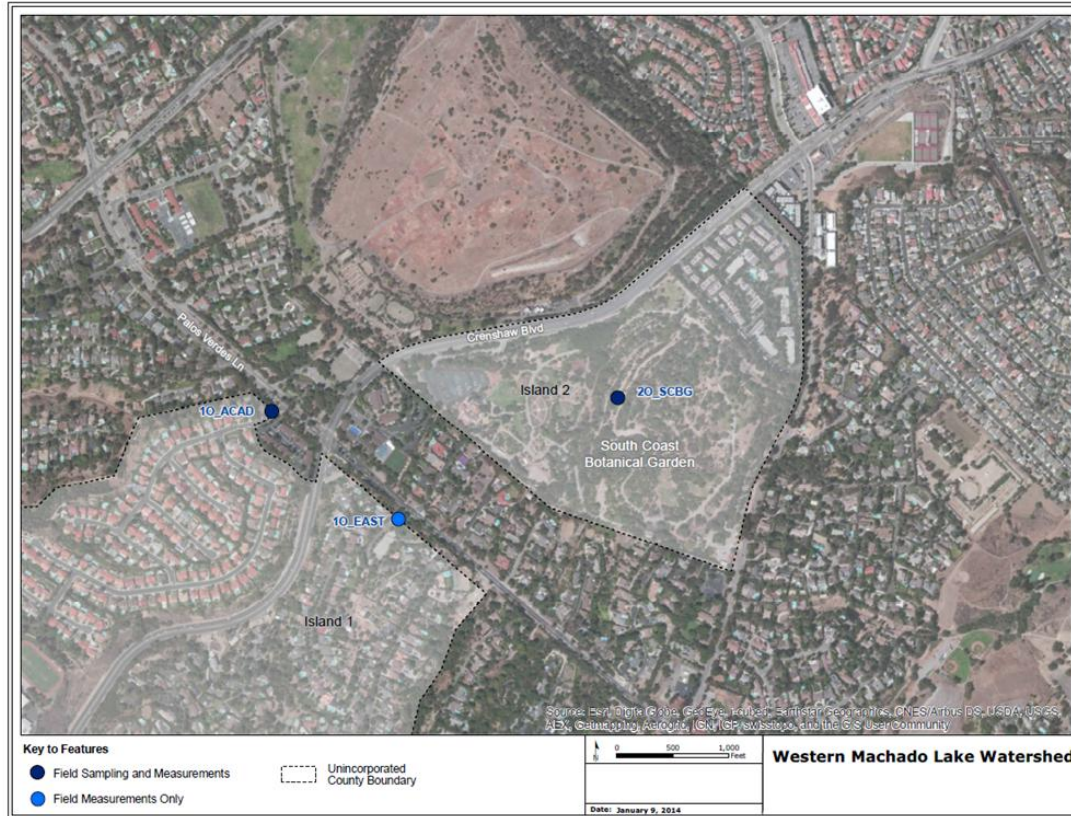


Figure 2-9: Unincorporated County Machado Lake monitoring locations.

The Unincorporated County land area on the Peninsula that drains to Machado Lake constitutes 35% of the total County land in the Machado Lake Watershed.

Annual Monitoring Results for the first two years of monitoring have been submitted to the Regional Board and the third year monitoring results will be submitted by December 15, 2015. Upon approval of the Peninsula CIMP, the Palos Verdes Nutrient Coordinated Monitoring Program and the Unincorporated County’s Programs will be consolidated. Details of this can be found in the Peninsula CIMP. Table 2-15 shows the allowable waste load allocation for the summation of loads from all three county islands.

Table 2-15: Load generated from all 3 County Islands in Machado Lake Watershed compared to Allowable Load

Constituents	Unincorporated County allowable WLAs [kg]		Unincorporated County Annual Loads [kg]	
	Interim (3/11/14)	Final (9/11/18)	Year 1	Year 2
Total Nitrogen	1,739	710	808	837
Total Phosphorus	887	71	134	129

2.2.5. SOURCE ASSESSMENT

A preliminary source assessment was conducted to identify potential sources within the watershed for the waterbody pollutant combinations classified as Category 1, 2, or 3 as outlined in MS4 Permit section VI.C.5.a.iii. Per the MS4 Permit, the following available data and documents were considered in the identification of known and suspected sources of the highest water quality priorities:

- Findings from the Peninsula WMG's Illicit Connections and Illicit Discharges Elimination Programs
- Findings from the Peninsula WMG's Industrial/Commercial Facilities Control Programs
- Findings from the Peninsula WMG's Development Construction Programs
- Findings from the Peninsula WMG's Public Agency Activities Programs
- TMDL Source Investigations
- Findings from Applicable Monitoring Programs
- TMDL Implementation Plans
- Other pertinent data, information, or studies related to pollutant sources and conditions that contribute to the highest water quality priorities
- Locations of the Peninsula Agencies' MS4s, including, at a minimum, all major outfalls and major structural controls for stormwater and non-stormwater that discharge to receiving waters
- Other known and suspected sources of pollutants in non-stormwater or stormwater discharges from the MS4 to receiving waters within the Peninsula EWMP area

The pollutants addressed in this section are toxics, metals, nutrients, bacteria, and trash. To generally describe the potential sources in the watershed, pollutant sources have been divided into the following categories: NPDES sources, road infrastructure, atmospheric deposition, and wastewater from sanitary sewer and SSOs. Typical sources of these pollutants are summarized in Table 2-16.

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Table 2-16: Typical Sources of Pollutants²⁹

Potential Source	Pollutants					Key References
	Bacteria	Nutrients	Metals	TSS/ Turbidity	Trash	
N P D E S S o u r c e s						
Residential land areas	•	•		•	•	1, 2, 3, 4, 5, 6
Agricultural activities (i.e., animal operations, land applications)	•	•		•		7, 8, 9
Construction activities			•	•	•	7,9
Industrial/municipal activities	•		•			6, 10
POTW discharges			•			11
Landscaping, fertilizers		•				7, 9
Pet waste	•	•				9,
Wildlife	•					7, 1
Native geology		•	•			7, 1
Land surface erosion			•	•		7
Detergents		•				9
Car washing				•		7, 9
R o a d I n f r a s t r u c t u r e						
Transportation sources (i.e., copper brake pads, tire wear)			•			7, 9, 12, 13
Pavement erosion			•	•		7, 14
A t m o s p h e r i c D e p o s i t i o n						
Construction activities			•			7, 9
Roofing			•			7
Resuspension of historic emissions in road dusts and soil particles			•			15
Land surface erosion		•				16
S a n i t a r y S e w e r a n d S S O s						
Sewer Leaks, sanitary sewer overflows (SSOs), illicit discharges, septic systems	•	•		•		7, 5,17
POTW discharges		•	•			12

1. LARWQCB (Los Angeles Regional Water Quality Control Board). 2002 & 2006. *Total Maximum Daily Load to Reduce Bacterial Indicator Densities at Santa Monica Bay Beaches During Wet Weather*. California Regional Water Quality Control Board, Los Angeles Region, Los Angeles, CA.
2. City of San Diego. 2009. *Aerial Deposition Study, Phase III*. Source Evaluation of TMDL Metals in the Chollas Creek Watershed. Final Report. San Diego, CA.
3. Gregorio, D., and S.L. Moore, 2004. *Discharge into state water quality protection areas in southern California*. <http://www.sccwrp.org/Homepage/RecentPublications.aspx>
4. San Diego County. 2011. *2009-2010 Urban Runoff Monitoring Annual Report*. January 2011.
5. SDRWQCB (San Diego Regional Water Quality Control Board). 2010. *Revised TMDL for Indicator Bacteria, Project I - Twenty Beaches and Creeks in the San Diego Region*. Resolution No. R9-2010-0001.
6. Lattin, G.L., C.J. Moore, A.F. Zellers, S.L. Moore, S.B. Weisberg. 2004. A Comparison of Neustonic Plastic and Zooplankton at Different Depths near the Southern California Shore. *Marine Pollution Bulletin*
7. County of Los Angeles. 2010. *Multi-pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed*. County of Los Angeles, Los Angeles, CA
8. City of San Diego. 2011. *Mission Bay and La Jolla Watershed Urban Runoff Management Program*. Fiscal Year 2010 Annual Report.
9. USEPA (U.S. Environmental Protection Agency). 2011. *Sanitary sewer overflows and peak flows*.
10. Gregorio, D., and S.L. Moore, 2004. *Discharge into state water quality protection areas in southern California*. <http://www.sccwrp.org/Homepage/RecentPublications.aspx>
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12. Schueler, T., and H.K. Holland. 2000. *The Practice of Watershed Protection*. Center for Watershed Protection, Ellicott City, MD.
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²⁹ City of San Diego and Caltrans 2012. *Tecolote Watershed Comprehensive Load Reduction Plan*. Final Report. San Diego, CA.

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14. Caltrans (California Department of Transportation). 2003. *A Review of the Contaminants and Toxicity Associated with Particles in Stormwater runoff*. August 2003.
15. Sabin, L. and K. Schiff. 2007. *Metal Dry Deposition Rates along a Coastal Transect in Southern California*. Technical Report #509. Southern California Coastal Research Project, Costa Mesa, CA
16. Sutula, M., K. Kamer, and J. Cable. 2004. *Sediment as a nonpoint source of nutrients to Malibu Lagoon, California*. Southern California Coastal Research Project. Technical Report.
17. SWRCB (State Water Resources Control Board). 2011. NPDES Permits (including Storm Water). Excel spreadsheet download. Accessed December 6, 2011.

NPDES SOURCES

There are two categories of pollutants sources, point sources and non-point sources. Point source discharges are regulated through National Pollutant Discharge Elimination System (NPDES) permits. Point sources include stormwater and urban runoff through the MS4 and other NPDES discharges. Stormwater runoff in the watershed is regulated through several types of permits including MS4 permits, a statewide stormwater permit for Caltrans; a statewide Construction General Permit (CGP); and a statewide Industrial General Permit (IGP). The NPDES IGP regulates stormwater discharges and authorized non-stormwater discharges from ten specific categories of industrial facilities, including manufacturing facilities, oil and gas mining facilities, landfills, and transportation facilities. Furthermore, the NPDES CGP regulates stormwater discharges from construction sites that result in land disturbances equal to or greater than one acre. Point source discharges from IGP, CGP, residential, commercial and transportation activities can be a significant source of pollutant loads.

Non-point sources, by definition, include pollutants that reach waters from a number of land uses and are not regulated through NPDES permits. Non-point sources include existing contaminated sediments within the watershed and direct air deposition to the waterbody surface. These sources can enter the MS4 and contribute pollutants through it to receiving waterbodies.

The following provides additional discussion regarding the presence of pollutants in stormwater runoff within the watershed.

TOXICS

The most significant toxic pollutants including legacy pollutants are PAH compounds, PCBs, DDT, chlordane and dieldrin.

Polycyclic aromatic hydrocarbons (PAHs) are a group of organic contaminants that form from the incomplete combustion of hydrocarbons. Most PAHs entering the environment are formed during the burning of (coal, oil, wood, gasoline, garbage, tobacco and other organic material). PAHs are an environmental concern because they are toxic to aquatic life and because several are suspected human carcinogens. Research has shown that the dominant source of origin is pyrogenic (combustion of organic matter) in the Los Angeles Region, and PAHs are often deposited through atmospheric deposition and delivered to waterbodies in stormwater runoff⁷. Other non-point sources may include leaking motor oil, tire wear and vehicular exhaust.

Polychlorinated biphenyls (PCBs) are mixtures of synthetic organic chemicals that were commonly used for various applications from approximately 1929 until 1979 when the U.S. banned PCB manufacturing, processing, distribution, and use. PCBs are a ubiquitous environmental contaminant and, like DDT, they have persisted in the aquatic environment and continue to accumulate in fish tissue even though

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production of PCBs was banned 25 years ago. PCBs may also still exist in products made before 1977 such as transformers, old fluorescent lighting fixtures, household caulking, paints and waxes³⁰.

DDT, chlordane and dieldrin are organochlorine pesticides that were historically used in agricultural activities have resulted in contamination of the aquatic environment. In 1970, 1.2 million pounds of DDT were applied in California primarily to agricultural areas³¹. Although banned in the U.S. as an insecticide in 1972, DDT and its breakdown products have persisted accumulating at high concentrations, and adhering strongly to soil particles. Chlordane had both non-agricultural and agricultural applications in the U.S, including its use on corn, citrus, deciduous fruits, nuts and vegetables. Non-agricultural uses included treating of pests in residential lawns and gardens as well as structural pests such as termites. Dieldrin is also an organochlorine pesticide and was widely used from 1950-1970 as a structural pesticide for the control of termites as well as an agricultural pesticide for cotton, corn and citrus crops. Chlordane and dieldrin have similar properties to DDT and therefore, have a strong binding affinity to soil particles and are persistent compounds.

Legacy pesticides and insecticides have been banned from use for many years, yet they continue to persist in the environment and cause water quality impairments. Soils historically treated with DDT, chlordane and dieldrin continue to be a present source of pollutants in the environment. In addition, from 1947 to 1971 large quantities of DDT were discharged from the Montrose Chemical plant in Los Angeles, which manufactured DDT, to the Los Angeles County Joint Water Pollution Control Plant (JWPCP) and discharges to the coastal waters of the Palos Verdes Shelf. PCBs also entered the JWPCP from several industrial sources in the Los Angeles area. Contamination of DDT and PCBs in the sediments of Santa Monica Bay, largely centered on the Palos Verdes shelf, have led to a large number of fish advisories for much of Santa Monica Bay and a commercial fishing ban in the area around the Palos Verdes shelf, which is an active USEPA Superfund site³². Possible delivery mechanisms of legacy pollutants may include fluxes from currently contaminated sediments into overlying waters and atmospheric deposition³³.

USEPA's Santa Monica Bay DDT and PCBs TMDL relies on a limited dataset to establish stormwater load allocations, relying on a single study (Curren et al., 2011) from a single creek (Ballona Creek, which is outside the Peninsula Cities WMG Area) to establish MS4 wasteload allocations throughout the entire SMB Watershed. It does not present sufficient data to assign MS4 contributions to the DDT and PCB concentrations observed in SMB, especially in light of the resident load of DDT and PCBs on the Palos Verdes Shelf associated with legacy discharges from Montrose via the Sanitation District's outfall.

³⁰ USEPA: Santa Monica Bay DDT and PCBs TMDL

³¹ LARWQCB (Los Angeles Regional Water Quality Control Board). 2010. *Machado Lake Pesticides and PCBs TMDL*. California Regional Water Quality Control Board, Los Angeles Region, Los Angeles, CA.

³² USEPA: Santa Monica Bay PCBs and DDT TMDL

³³ LARWQCB (Los Angeles Regional Water Quality Control Board & U.S. Environmental Protection Agency, Region 9). Dec. 2010. *Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants Total Maximum Daily Loads Draft*. California Regional Water Quality Control Board, Los Angeles Region, Los Angeles, CA.

BACTERIA

Specific sources of bacteria are associated with anthropogenic and non-anthropogenic sources which may include:

- Environmental – soils, decaying vegetation,
- Animal wastes – birds, dogs, cats, horses, opossums, raccoons etc.
- Equestrian activities - horse waste such as manure, urine and soiled bedding are organic, biodegradable materials, and many of their physical, biological and chemical properties can be harmful to water quality. Many of the nutrients ingested by horses return to the environment in feces and urine which are then carried by runoff to streams and lakes. Some activities, such as heavy grazing or pasture use, remove the soil's vegetative cover and can expose the soil surface. Exposed soil is easily transported by runoff to the water bodies. Equestrian activities are a common practice within the watershed in public and private facilities. Horses are kept at public municipal stables, licensed privately owned operated stables and single-family residential properties. Organic debris from gardens, landscaping, parks, food waste and illegal dumping from recreational vehicle holding tanks among others, can be a source of elevated levels of total coliform bacteria.
- Sanitary sewer leaks and spills; illicit connections of sanitary lines to the storm drain system;
- Illegal connections and discharges are also very likely sources of bacteria in stormwater discharge.

Table 2-17 includes data based on Annual NPDES Reports submitted to the Regional Board from 2001-2012, for illicit connections and illicit discharges. There is currently no data available identifying the constituents associated with the IC/IDs recorded during this period.

Table 2-17: Number of Illicit Connections and Discharges From 2001-2012³⁴

Permittee	Illicit Connections	Illicit Discharges
Rancho Palos Verdes	10	103
Palos Verdes	2	151
Rolling Hills Estates	5	78
<i>Total</i>	<i>17</i>	<i>332</i>

As mentioned previously, the Peninsula is currently in an anti-degradation condition for bacteria in Santa Monica Bay. Monitoring sites historically experience fewer exceedance days than the reference system used to determine allowable exceedance days in the Santa Monica Bay Beaches Bacteria TMDL. Therefore, the Peninsula beaches are currently in an antidegradation condition, which means it was determined that water quality is currently sufficient for protecting beneficial uses and requires that existing high quality be maintained.

³⁴ Details on the Unincorporated County's illicit connections and discharges can be found in the Unincorporated County's Annual Report, which can be found online at http://dpw.lacounty.gov/wmd/NPDESRSA/AnnualReport/report_directory.cfm.

NUTRIENTS

Excessive input of nutrients (such as nitrogen and phosphorus) is the primary cause of eutrophication of surface waters, in which excess nutrients stimulate algal growth which leads to increased turbidity, decreased levels of oxygen, and odor problems. Possible sources of nutrients include runoff from residential and commercial areas due to landscaping activities and use of fertilizer for lawns and gardens, this includes organic debris. Activities such as washing cars, parking lots and driveways can contribute nutrients to the watershed since many of the detergents used contain phosphorus. Other sources of nutrients include food wastes and domestic animal waste. These pollutants build up and are then washed into the waterways through the storm drain system when it rains. These kinds of loads are typically highest during the first major storm flush and even after extended periods of dry weather when pollutants have accumulated. Other major categories of nutrients sources include:

- Manure - Within the portion of the peninsula which drain to Machado Lake equestrian activities are very common within the watershed in private and public stables and even residential areas. Horse manure, if improperly managed, has the potential to pose a significant source of nutrients in runoff. Based on the Palos Verdes Peninsula Sub-watershed Coordinated Implementation Plan developed in compliance with the Machado Lake Nutrient TMDL (2011), it is estimated that in the Peninsula WMG's jurisdiction there are approximately 550 horses and 60 cattle within areas tributary to Machado Lake. Cattle and horses are similar in terms of nutrient generation, therefore the average 1,000-pound horse/cattle produces over 102 pounds of total nitrogen and 18.8 pounds of total phosphorous per year³⁵. Based on this data, the amount of total nitrogen and phosphorous produced by these large animals is estimated to be 66,300 pounds per year of total nitrogen and 12,215 pounds per year of total phosphorous.
- Golf courses – golf courses are a major source of nutrients since fertilization activities and watering rates are generally much greater than in residential and commercial areas. The excess nutrients accumulated in the soils can be transported to waterways through excessive irrigation or stormwater runoff. There are approximately 5 golf courses within the Peninsula WMG.
- Air deposition of nitrogen due to air pollution, the predominate species being NHO_3 (nitric acid), NO_2 (nitrogen dioxide) and NH_3 (ammonia)³⁶.

³⁵ Wheeler and Zajackowski. *Horse Stable Manure Management, Publication G-97*. Penn State College of Agricultural Sciences Cooperative Extension, Agricultural and Biological Engineering

³⁶ Palos Verdes Peninsula Subwatershed Coordinated Implementation Plan. 2011.

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METALS

Although naturally occurring, concentrations of heavy metals such as cadmium, copper, lead, and zinc are a concern in many watersheds because of potential industrial and urban discharges. These types of sources include Industrial General Permit (IGP) covered facilities, Construction General Permit (CGP) covered facilities, and other types of urban activities.

a. IGP Activities

Less than 2% of the Peninsula WMG land use acreage is designated for industrial use. According to the Stormwater Multiple Application and Report Tracking System (SMARTS) database, the three previously active industrial permits in Rolling Hills Estates have been terminated as of August 2015, which results in zero active industrial permits in the Peninsula Watershed.

b. CGP Activities

Discharges covered under the CGP also have the potential to contribute metals loading from construction sites. Sediment delivered from construction sites can contain metals from construction materials and heavy equipment. Additionally, metals can leach out of building materials and construction waste exposed to stormwater³⁷.

According to the Stormwater Multiple Application and Report Tracking System (SMARTS) database, there are approximately eight current active construction permits and zero violations recorded for inspections conducted from 2002-2012.

Table 2-18: Active CGP Sites According to SMARTS^a

Permittee	Total
Rancho Palos Verdes	5
Palos Verdes	0
Rolling Hills Estates	3
County Unincorporated	0

^a As of May 1, 2014

³⁷ Raskin, L., M.J. Singer, and A. DePaoli. 2004. Final Report to the State Water Resources Control Board Agreement number 01-269-250. University of California, Davis, CA.

OTHER URBAN ACTIVITIES

General wear and tear of automotive parts can be a significant source of metals. For example, brake wear and tire wear can release copper, lead, and zinc into the environment and contribute concentrations of metals to roads and in turn stormwater runoff. Motor oil and automotive coolants spills are another potential source of metals. Pesticides, algacides, wood preservatives, galvanized metals, and paints used across the watershed can also contain these metals.

The fertilizers used for lawn and landscape maintenance are also a source of metals and organic chemicals. Fertilizers, herbicides, and pesticides contain metals such as cadmium, copper, mercury, zinc, lead, iron, and manganese, which are also distributed when applying fertilizers and pesticides³⁸.

TRASH

The major source of trash in the Peninsula WMG results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include storm drain, wind action and direct disposal into waterbodies. Several studies have shown that commercial operations generate more pollutants than residential operations, and as much as three times the amount generated from light industrial operations³⁹.

ROAD INFRASTRUCTURE SOURCES

Runoff from highways and roads carries a significant load of pollutants. Pollutants originate from cars, roadway degradation, and landscaping surrounding the highways. Typical contaminants associated with these include sediment, heavy metals, oils and grease, debris, fertilizers, and pesticides, among others⁴⁰. The use and wear of cars is one of the most prevalent sources of roadway pollutants. A study found that cars are the leading source of metal loads in stormwater, producing over 50 percent of copper, cadmium, and zinc loads⁴¹. Vehicle brake pads constitute the single largest source of copper⁴². Simultaneously, tires, and engine parts are also a significant source of metals pollutants; almost 50 percent of tire wear accounts for over 50 percent of the total cadmium and zinc loads⁴³. Roadways can also be a source of nutrients from air deposition of nitrogen and from parkway landscaping runoff which is known to contain nutrients from common application of fertilizers

³⁸ County of Los Angeles. 2010. *Multi-pollutant TMDL Implementation Plan for the Unincorporated County Area of Los Angeles River Watershed*. County of Los Angeles, Los Angeles, CA

³⁹ LARWQCB. 2007. *Trash Total Maximum Daily Loads for the Los Angeles River Watershed*. Los Angeles, CA.

⁴⁰ Caltrans (California Department of Transportation). 2003. *Discharge characterization study report*. California Department of Transportation, Sacramento, CA.

⁴¹ Schueler, T., and H.K. Holland. 2000. *The Practice of Watershed Protection*. Center for Watershed Protection, Ellicott City.

⁴² TDC Environmental 2004, *Copper Sources in Urban and Shoreline Activities*. San Francisco, CA.

⁴³ Davis A.P., M. Shokouhian, and S. Ni. 2001. Loading estimates of lead, copper, cadmium, and zinc in urban runoff from specific sources. *Chemosphere*.

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Table 2-19: Typical Road Infrastructure Sources of Pollutants⁴⁴

Source	Cadmium	Chromium	Copper	Iron	Nickel	Lead	Zinc	PAHs	Nutrients	Synthetic Organic Chemicals
Gasoline	●		●			●	●			
Exhaust					●	●		●		●
Motor oil and grease				●	●	●	●	●		
Antifreeze	●	●	●	●		●	●	●		
Undercoating						●	●			
Brake Linings			●	●	●	●	●			
Tires	●		●			●	●	●		
Asphalt	●		●		●		●	●		
Concrete			●		●		●			
Diesel Oil	●	●				●	●			●
Engine wear				●	●	●	●			
Fertilizers, pesticides, and herbicides	●		●	●	●		●		●	●

ATMOSPHERIC DEPOSITION

Atmospheric deposition is the direct and indirect transfer of pollutants from the air to surface waters. Pollutants in the atmosphere deposit onto solid surfaces and then are washed off by rain, becoming part of the stormwater runoff that reaches the watershed. Atmospheric deposition of pollutants either directly to a waterbody surface or indirectly to land in the watershed can be a large source of contamination. Typical pollutants associated with atmospheric deposition are metals, PAHs, PCBs, and, to a lesser extent, nutrients. These pollutants enter the atmosphere from point sources (i.e., industrial facility emitting metals into the air) and mobile sources such as trucks and automobiles. A comparison of trace metals contributions from aerial deposition, sewage treatment plants, industrial activities, and power plants is shown in Table 2-20.

Table 2-20: Comparison of source annual loadings to Santa Monica Bay (metric tons/year)⁴⁵

Metal	Aerial Deposition	Non-Aerial Sources		
		Sewage Treatment Plants	Industrial	Power Plants
Chromium	0.5	0.6	0.02	0.14
Copper	2.8	16	0.03	0.01
Lead	2.3	<0.01	0.02	<0.01
Nickel	0.45	5.1	0.13	0.01
Zinc	12.1	21	0.16	2.4

Nutrients are also atmospherically deposited. According to a research study conducted in 2004, the annual loading of nitrogen through atmospheric deposition in the nearby Los Angeles River watershed is 5,559 tons per year⁴⁶.

⁴⁴ Nixon, H., and J.D. Saphores. 2007. Impacts of motor vehicle operation on water quality: Clean-up costs and policies. Transportation Research Part D. *Transport and Environment*.

⁴⁵ Stolzenbach, K.D. 2006. Atmospheric Deposition Grades B+ to C-. Southern California Environmental Report Card 2006. University of California, Los Angeles, Institute of the Environment, Los Angeles, CA.

⁴⁶ Lu, R., K. Schiff, S. Solzenbach, and D. Keith. 2004. *Nitrogen Deposition on Coastal Watersheds in the Los Angeles Region*. Southern California Coastal Water Research Project Annual Report. 2003-2004. pp. 73– 81.

SANITARY SEWER AND SANITARY SEWER OVERFLOWS (SSOs)

Sanitary sewer systems and septic systems are potential sources of contaminants. Aging systems in need of repair or replacement, severe weather, improper system operation and maintenance (O&M), clogs, and root growth can contribute to sanitary sewer leaks and overflows. When sanitary sewers overflow or leak, they can release raw sewage into the environment, which can contain pollutants such as suspended solids, pathogenic organisms, toxic pollutants, oil and grease; but in particular, high concentrations of bacteria and nutrients¹⁹.

According to the SSO database in the California Integrated Water Quality System (CIWQS) a total of 144 SSOs have been recorded within the Peninsula WMG since 2006. Table 2-21 includes information of the reported SSO discharges.

Table 2-21: Reported SSO discharges (Category 1-3) from 2006 to 2012 located within the Peninsula WMG

Permittee	Total SSOs	Total Volume (gal)
Rancho Palos Verdes	71	28,105
Palos Verdes Estates	60	31,350
Rolling Hills Estates	13	3,395
<i>Total</i>	<i>144</i>	<i>62,850</i>

OUTFALLS

Stormwater outfalls are point sources of stormwater runoff into receiving waterbodies and are regulated by the NPDES MS4 permit. The locations of all MS4 major outfalls that contribute significant discharges to receiving waters are being investigated through the CIMP, and will be evaluated further during development of the EWMP. Source investigations of significant discharges will be conducted per MS4 Permit requirements.

2.2.6. PRIORITIZATION

MS4 Permit section VI.C.5.a.iv outlines factors that should be considered when developing the sequence of addressing Category 1, 2, and 3 pollutants within the Peninsula EWMP watersheds. Based on Section 2.2.5: Source Assessment and the Reasonable Assurance Analysis (RAA), a sequence for addressing these pollutants will be developed based on the following priorities:

- Highest: TMDLs
 - TMDL pollutants with past due interim or final limits
 - TMDL pollutants with interim and final limits that fall within the MS4 Permit term, or the time period: September 6, 2012 – December 28, 2017
 - Pollutants that are in the same class as a TMDL pollutant
- Second Highest: Other Receiving Water Considerations
 - Pollutants on the 303(d) List for which MS4 discharges are a suspected source based on findings from the source assessment
 - Pollutants that exceed receiving water limitations and the findings from the source assessment indicate the MS4 as a source (these pollutants will be determined based on monitoring data collected as part of the CIMP).

Table 2-22 summarizes the priority pollutants for the Peninsula EWMP based on their association with MS4 discharges (based on the Source Assessment) and the prioritization criteria described above.

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Table 2-22: Peninsula EWMP Priority Pollutants

Category	Class	Pollutant	Waterbody	Potentially Associated with MS4	Priority
Category 1	Trash	Trash/Marine Debris	Santa Monica Bay and Machado Lake	Yes	Highest
	Bacteria	Coliform and Enterococcus	Santa Monica Bay	Yes	Highest
	Historic Organics	PCBs	Santa Monica Bay, Machado Lake and Los Angeles Harbor	Yes	Second Highest
		DDT	Santa Monica Bay, Machado Lake and Los Angeles Harbor	Yes	Second Highest
		Chlordane	Machado Lake and Los Angeles Harbor	Yes	Second Highest
		Dieldrin	Machado Lake	Yes	Second Highest
	Nutrients	Nitrogen	Machado Lake	Yes	Second Highest
		Phosphorus	Machado Lake	Yes	Second Highest
		Ammonia	Machado Lake	Yes	Second Highest
		Chlorophyll a *	Machado Lake	Yes	Second Highest
		Dissolved Oxygen *	Machado Lake	Yes	Second Highest
		Odor *	Machado Lake	Yes	Second Highest
		Eutrophic Conditions *	Machado Lake	Yes	Second Highest
		Algae *	Machado Lake	Yes	Second Highest
	Metals	Copper	Los Angeles Harbor	Yes	Second Highest
		Lead	Los Angeles Harbor	Yes	Second Highest
		Mercury	Los Angeles Harbor	Yes	Second Highest
		Zinc	Los Angeles Harbor	Yes	Second Highest
	PAHs	PAHs	Los Angeles Harbor	Yes	Second Highest
		Benzo(a)pyrene	Los Angeles Harbor	Yes	Second Highest
Chrysene		Los Angeles Harbor	Yes	Second Highest	
Benzo[a]anthracene		Los Angeles Harbor	Yes	Second Highest	
Dibenz[a,h]anthracene		Los Angeles Harbor	Yes	Second Highest	
Phenanthrene		Los Angeles Harbor	Yes	Second Highest	
Category 2	Metals	Pyrene	Los Angeles Harbor	Yes	Second Highest
		Copper	Machado Lake (Wilmington Drain)	Yes	Second Highest
	Bacteria	Lead	Machado Lake (Wilmington Drain)	Yes	Second Highest
		Coliform Bacteria	Machado Lake (Wilmington Drain)	Yes	Highest

* These “constituents” are not pollutants, but rather describe water quality conditions associated with excessive nutrients; therefore they have been categorized in the same class as other nutrients.

Highest: TMDL pollutants with past deadlines or interim/final deadlines that fall within the MS4 Permit term and those constituents in the same class

Second Highest: Pollutants for which data indicate impairment or exceedances of receiving water limitations and the findings from the source assessment implicates discharges from the MS4

3. SELECTION OF WATERSHED CONTROL MEASURES

This chapter identifies Watershed Control Measures (WCMs) to be implemented through the Participating Agencies' jurisdictional stormwater management programs, and collectively on a watershed scale. The WCMs are structural and/or nonstructural controls designed with the following objectives:

- Prevent or eliminate nonstormwater discharges to the MS4 that are a source of pollutants from the MS4 to receiving waters.
- Implement pollutant controls necessary to achieve all applicable interim and final water quality-based effluent limitations and/or receiving water limitations pursuant to corresponding compliance schedules.
- Ensure that discharges from the MS4 do not cause or contribute to exceedances of receiving water limitations.

The goal is to create an efficient program that focuses individual and collective agency resources on water quality priorities (WQPs). The WCMs are categorized as:

- Minimum Control Measures (MCMs)
- Nonstormwater Discharge (NSWD) Measures
- Targeted Control Measures (TCMs), which are designed to achieve applicable water quality-based effluent limitations and receiving water limitations.

Each WCM category may be further categorized as either structural or nonstructural as well as either existing or proposed. Combined with Chapter 4 (RAA) and Chapter 5 (Compliance Schedules), the EWMP addresses the nature, scope, and timing of implementation for each WCM and provides interim milestones for the WCMs to achieve TMDL compliance. Also discussed are the responsibilities of each Permittee.

Based on results from the RAA for the 90th percentile year (TMDL Year 1995), the captured and retained volume of stormwater runoff estimated is 750 acre-ft. This includes captured and retained stormwater runoff due to LID implementation, downspout disconnection incentive, existing/planned BMPs, and proposed regional BMPs.

Please note that this estimate does not reflect an estimate of recharged groundwater, but is simply an estimate of the reduced amount of stormwater runoff leaving the Peninsula EWMP Area as a result of BMP implementation as discussed herein.

3.1. MINIMUM CONTROL MEASURES

The Minimum Control Measures (MCMs) are baseline WCMs required for all Permittees. The MCMs are defined in the MS4 Permit (excluding modifications set forth in an approved EWMP) and are generally implemented individually by each Permittee. The objectives of the MCMs are to 1) result in a significant reduction in pollutants discharged into receiving waters and 2) satisfy the requirements of 40 CFR §122.26(d)(2)(iv). The MCMs are separate from Targeted Control Measures, which are developed by the Peninsula WMG and included in the EWMP to specifically address WQPs.

The MS4 Permit allows the modification of certain MCMs programs, so long as the modified actions are set forth in the approved EWMP and are consistent with 40 CFR §122.26(d)(2)(iv). The modifications are based on an assessment to identify opportunities for focusing resources on WQPs. The term “modifications” refers only to instances where language from the MS4 Permit MCM provisions is removed and/or replaced. Any control measures that are strictly enhancements of the existing programs (i.e. do not conflict with the MS4 Permit MCM provisions) are included in the separate category of Targeted WCMs.

The following sections include a summary of the assessment of each MCM program as well as a determination as to whether each Participating Agency will implement the MCM provisions either 1) as explicitly stated in the corresponding section of the MS4 Permit or 2) with modifications to focus resources on WQPs. The Agencies may consider additional MCM modifications through the Adaptive Management Process.

3.1.1. LOS ANGELES COUNTY FLOOD CONTROL DISTRICT MINIMUM CONTROL MEASURES

The LACFCD will implement the MCMs as defined from §VI.D.1 to §VI.D.4 of the MS4 Permit.

3.1.2. ASSESSMENT AND MODIFICATION OF MINIMUM CONTROL MEASURES (PARTICIPATING AGENCIES, EXCLUDING LACFCD)

Pursuant to MS4 Permit §VI.C.5.b.iv.(1).(a), the following section is an assessment of the MS4 Permit MCMs, intended to identify opportunities for modifying MCMs to focus resources on WQPs. This section applies to all participating agencies, excluding the LACFCD.

DEVELOPMENT CONSTRUCTION PROGRAM

ASSESSMENT

The reduction of sediment through an effective Development Construction Program addresses WQPs. This is because sediment mobilizes other pollutants, including many of the WQP pollutants. As such the Development Construction Program is an integral component of each agency’s jurisdictional stormwater management program.

Compared to the third term MS4 Permit, the current Permit expands the provisions for the Development Construction Program. This expansion includes additional or enhanced requirements for plan review, site tracking, inspection frequencies, inspection standards, BMP implementation and employee training. If implemented effectively, these enhancements will aid in the control of sediment within the Watershed, and consequently, will address WQPs. No modifications to the provisions of the Development Construction Program are proposed.

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DETERMINATION

The Agencies implement the MCMs as defined in §VI.D.8 of the MS4 Permit. Guidance documents, some of which can be found in Appendix 2, are an optional aid in the implementation of jurisdictional programs.

INDUSTRIAL/COMMERCIAL FACILITIES PROGRAM

ASSESSMENT

The MS4 Permit provisions for the Industrial/Commercial Facilities Program provide opportunities for customization to address WQPs. Specifically, §VI.D.6.e.i.4 states that industrial inspection frequencies may be modified through the EWMP development process.

DETERMINATION

The Agencies implement the MCMs as defined in §VI.D.6.d and §VI.D.6.e of the MS4 Permit.

Guidance documents have been prepared for the Program, some of which can be found in Appendix 2, intended to assist in implementation of a jurisdictional program.

ILLCIT CONNECTION AND ILLICIT DISCHARGES ELIMINATION PROGRAM

ASSESSMENT

The purpose of the IC/ID Elimination Program is to detect, investigate and eliminate IC/IDs to the MS4. In order to address WQPs, a potential modification to MS4 Permit provisions would be the inclusion of a systematic approach for the detection of illicit discharges. However such an approach is addressed through non-stormwater outfall based screening monitoring as outlined in the MRP. Also, such activities do not conflict with the MS4 Permit provisions for an IC/ID Elimination Program, and as such would be classified as a Targeted Control Measure. As such there is no need to modify the base provisions of the program.

DETERMINATION

The Agencies implement the MCMs as defined in §VI.D.10 of the MS4 Permit. To assist in the implementation of a jurisdictional program, guidance documents have been prepared, some of which can be found in Appendix 2.

PLANNING AND LAND DEVELOPMENT PROGRAM

ASSESSMENT

Consistent with MS4 Permit §VI.C.5.b.iv.1.a, the Planning and Land Development Program was not assessed for potential modifications.

DETERMINATION

The Agencies implement the MCMs as defined in §VI.D.7 of the MS4 Permit. To assist in the implementation of jurisdictional MCM programs, guidance documents can be found in Appendix 2.

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PUBLIC AGENCY ACTIVITIES PROGRAM

ASSESSMENT

The Public Agency Activities Program is divided into several sub-programs. Many of the MS4 Permit provisions within the sub-programs consist of baseline BMPs that are not amenable to modification. The sub-programs that are amendable to a prioritized approach – such as street sweeping and catch basin cleaning frequencies – already provide this opportunity (frequencies are based on an agency’s assessment of trash and debris generation). The provisions of the public construction activities sub-program are considered an integral component of the jurisdictional stormwater program, for the reasons explained in the assessment of the Development Construction Program provisions. In summary there is no need to modify the MS4 Permit provisions of the program.

DETERMINATION

The Agencies implement the MCMs as defined in §VI.D.9 of the MS4 Permit. To assist in the implementation of a jurisdictional program, guidance documents can be found in Appendix 2.

PUBLIC INFORMATION AND PARTICIPATION PROGRAM

ASSESSMENT

The MS4 Permit allows an agency to implement the requirements of the Public Information and Participation Program (PIPP) 1) by participating in a County-wide effort, 2) by participating in a Watershed Group effort, 3) individually within its jurisdiction or 4) through a combination of these approaches. The Agencies will implement the PIPP following a combination of approaches.

The following table outlines the elements of the PIPP MCM Program and modification made in order to address Peninsula WMG watershed priorities.

DETERMINATION

The table below provides clarification on elements of the MS4 Permit provisions for the PIPP:

Permit section	Modification to MCM	Implementation
§VI.D.5.c.(i) Public Participation	No modification to existing MCM proposed	Each agency will participate in a County-wide sponsored PIPP to provide a means for public reporting of clogged catch basin inlets and illicit discharges/dumping, faded or missing catch basin labels, and general stormwater and non-stormwater pollution prevention information.
§VI.D.5.c.(ii) Organize Events	No modification to existing MCM proposed	Organization of events targeted to residents and population subgroups to educate and involve them in stormwater and non-stormwater pollution prevention and clean-up will be addressed individually by each City or jointly on a watershed level.
§VI.D.5.d Residential Outreach Program	The Peninsula WMG has modified VI.D.5.d.i.(3), to implement activity-specific outreach programs targeted at the following residential activities: a) DIY auto activities b) DIY home improvement activities	Each City will implement the Residential Outreach Program through a combination of individual, watershed, and Countywide program efforts to implement Residential Outreach Program elements.

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	c) DIY landscaping and gardening activities d) Pet owner activities	
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PROGRESSIVE ENFORCEMENT AND INTERAGENCY COORDINATION

ASSESSMENT

MS4 Permit §VI.D.2, the Progressive Enforcement and Interagency Coordination Program which is applicable to the Industrial/Commercial Facilities, Planning and Land Development, Development Construction, and Illicit Discharges Illicit Connections programs, was not assessed for potential modifications.

DETERMINATION

The Agencies implement progressive enforcement policies consistent with §VI.D.2 of the MS4 Permit.

3.1.3. ENHANCED FOURTH TERM MS4 PERMIT MINIMUM CONTROL MEASURES (PARTICIPATING AGENCIES, EXCLUDING LACFCD)

Part VI.D of the MS4 Permit (the MCM provisions) describes baseline provisions and program elements to be implemented within each participating agency’s jurisdictional stormwater program. Some of the MCMs of the fourth term MS4 Permit are relatively unchanged carry-overs from the prior third term permit while other MCMs are either enhancements of the third term MCMs or entirely new provisions. This section briefly describes the enhanced MCMs implemented by the Peninsula WMG Agencies, excluding those required for the LACFCD in §VI.D.4. An MCM is considered new if it was not required by the third term MS4 Permit and is considered enhanced if it is an enhancement of a related provision of the third term MS4 Permit. The new and enhanced provisions of the MS4 Permit have been assumed to result in a load reduction of 5%.¹ Descriptions of each new and enhanced provision are included in the following sections.

The details of each provision may be found in the relevant sections of the MS4 Permit, which are referenced below.

3.1.3.1. DISTRIBUTED STRUCTURAL CONTROLS

The enhanced MCMs consist primarily of nonstructural control measures, with the marked exception of the Planning and Land Development provisions, described as follows.

PLANNING AND LAND DEVELOPMENT

MS4 Permit §VI.D.7

The Low Impact Development (LID) and hydromodification provisions of the Planning and Land Development program are a significant enhancement from the third term MS4 Permit. The implementation of structural LID BMPs at new developments throughout the watershed will appreciably decrease the effective impervious area, reduce flow, and reduce pollutant loads. These benefits will increase in effectiveness over time as more existing developments are redeveloped and bound to the Planning and Land Development requirements.

TRASH EXCLUDER INSTALLATION – STATEWIDE TRASH PROVISIONS

MS4 Permit §VI.D.9.h.vii.(1)

In areas that are not subject to a trash TMDL, the Public Agency Activities Program includes a requirement to install excluders (or equivalent devices) on or in Priority A [see §VI.D.9.h.iii.(1)] area catch basins or outfalls to prevent the discharge of trash to the MS4.

The Statewide Trash Amendment supersedes the Public Agency Activities Program where applicable, which includes the installation of full-capture devices in the priority land use areas of high density residential, industrial, commercial, mixed urban and public transportation stations. The individual agency jurisdictions where the Statewide Trash Provisions are applicable are individually responsible for implementing this provision. See Figure 3-1, Figure 3-2, Figure 3-3, and Figure 3-4.

¹ In addition to the 5% reduction assumed for new and enhanced provisions, a 2.5% load reduction has been assumed for the Nonstructural Targeted Control Measures, as described in Section 3.2.2.

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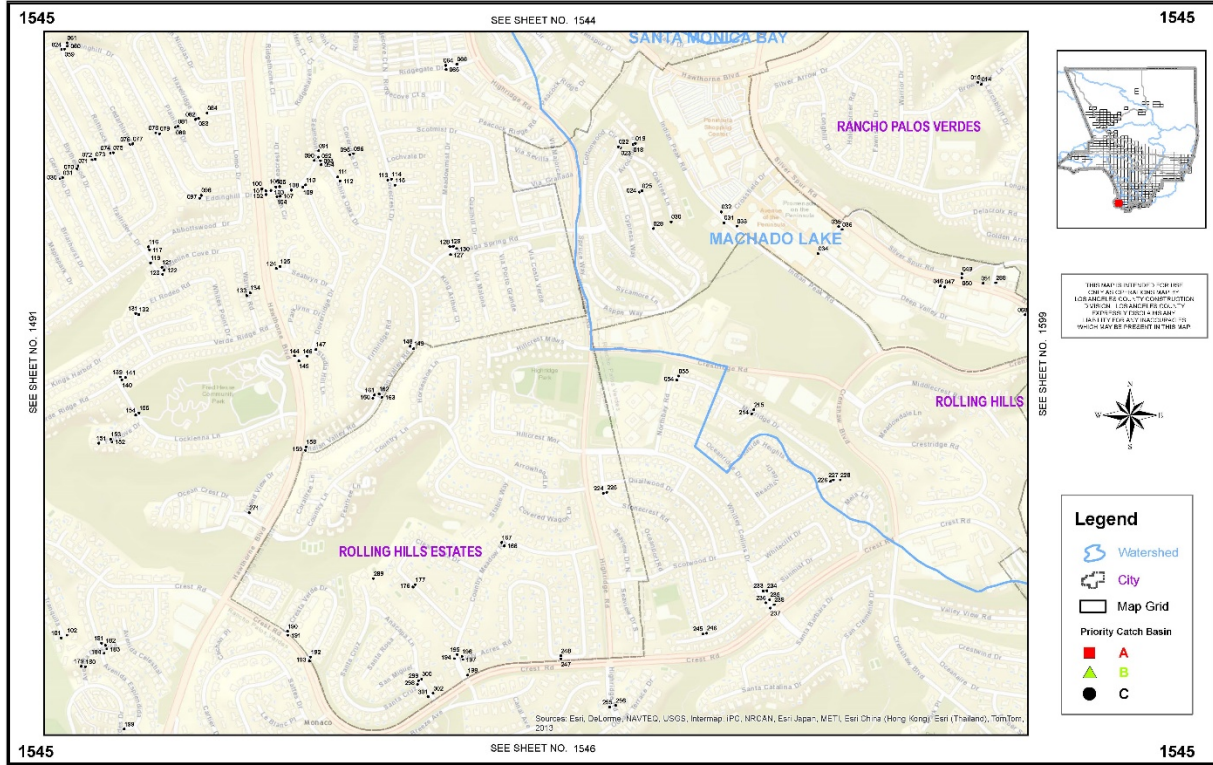


Figure 3-1: Peninsula WMG Area Catch Basin Priority Maps 1/3 (LACFCD).



Figure 3-2: Peninsula WMG Area Catch Basin Priority Maps 2/3 (LACFCD).

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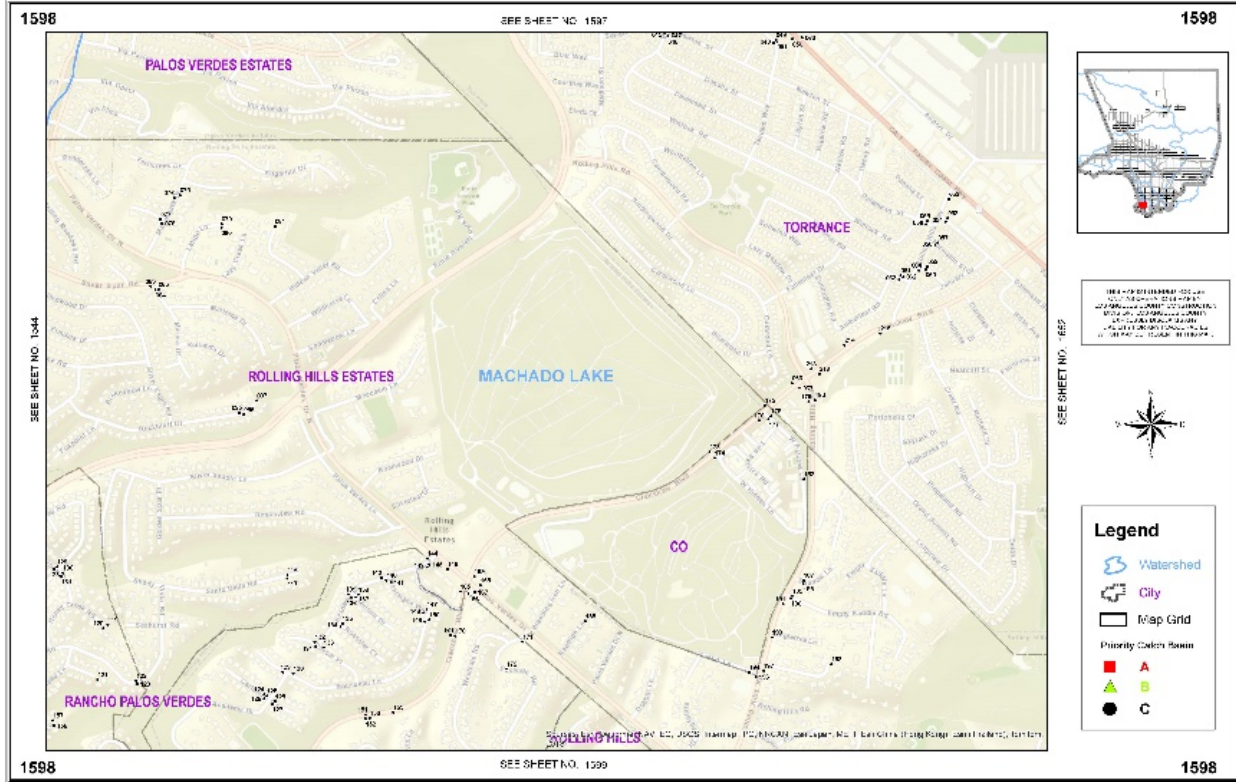


Figure 3-3: Peninsula WMG Area Catch Basin Priority Maps 3/3 (LACFCD).

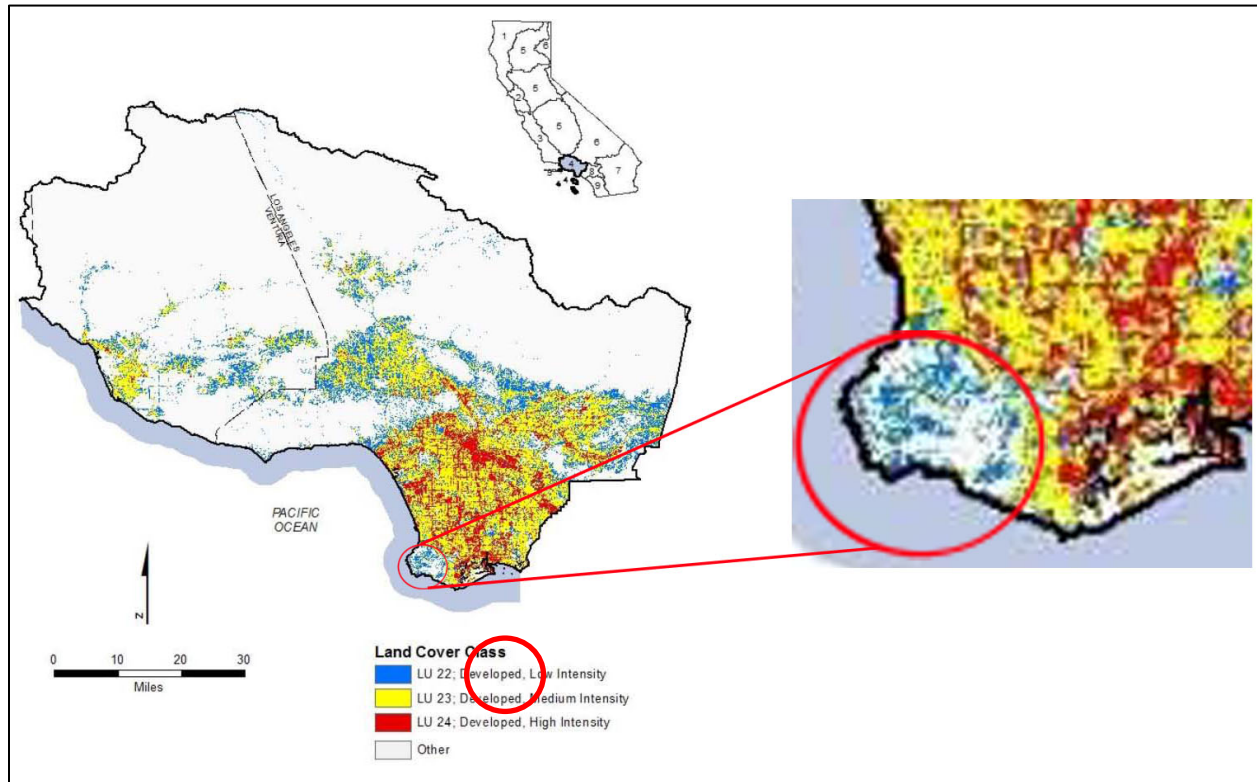


Figure 3-4: Palos Verdes Peninsula Land Cover Class

(Source: State Water Resources Control Board. Final Staff Report for Trash Amendments, April 2015, Figure 10.)

3.1.3.2. NONSTRUCTURAL CONTROLS

Table 3-1 lists the enhanced nonstructural MCMs as well as the enhanced NSWDM measures. Each of the listed controls are described below Table 3-1.

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Table 3-1: Enhanced Fourth Term MS4 Permit Nonstructural MCMs (Participating Agencies, Excluding LACFCD)

Minimum Control Measure	BMP effectiveness with respect to WQPs ²			Agency				
	Priority Pollutant Reduction	Sediment reduction	Volume or flow reduction	LACFCD	County	Palos Verdes Estates	Rolling Hills Estates	Rancho Palos Verdes
Planning and Land Development								
Amend development regulations to facilitate LID implementation	◆	◆	◆	X	X	X	X	X
Post-construction BMP tracking, inspections and enforcement	□	□	□	X	X	X	X	X
Industrial/Commercial Facilities								
Business assistance program and BMP notification	□	□	□	X	X	X	X	X
Construction								
Enhanced construction plan review program	□	◆	□	X	X	X	X	X
Enhanced inspection standards and BMP requirements	□	◆	□	X	X	X	X	X
Increased inspection frequencies	□	◆	□	X	X	X	X	X
Enhanced staff training program	□	◆	□	X	X	X	X	X
Illicit Connection Illicit Discharge Detection/Elimination								
Enhanced IC/ID enforcement and written procedures	□	□	□	X	X	X	X	X
Enhanced staff/contractor training	□	□	□	X	X	X	X	X
Public Information and Participation								
Stormwater resources on Agency website	□	□	□	X	X	X	X	X
Enhanced public education	□	□	□	X	X	X	X	X
Public Agency Activities								
Enhanced BMP requirements for fixed facility/field activities	□	□	□	X	X	X	X	X
Reprioritization of catch basins and clean-out frequencies	◆	◆	◇	X	X	X	X	X
Integrated Pest Management Program	□	◇	◇	X	X	X	X	X
Enhanced measures to control infiltration from sanitary sewers	◆	◇	◇	X	X	X	X	X
Inspection and maintenance of Permittee owned treatment controls	□	□	□	X	X	X	X	X
Enhanced inspector/staff training	□	□	□	X	X	X	X	X

X – Implemented by agency within current MS4 Permit term.
 ◆ Primary pollutant reduction

MCM – Minimum Control Measure.
 □ Secondary pollutant reduction

NSWD – Nonstormwater discharge measure.
 ◇ Pollutant not addressed

² BMP effectiveness ratings based on similar BMPs listed in Tetra Tech’s CLRP for Chollas Creek Watershed in San Diego County, 2012.

PLANNING AND LAND DEVELOPMENT PROGRAM

AMEND DEVELOPMENT REGULATIONS TO FACILITATE LID IMPLEMENTATION

MS4 Permit §VI.C.4.c.i, §VI.D.7.d.i

The Participating Agencies have developed and adopted LID ordinances and Green Street Policies. These measures will facilitate LID implementation.

POST-CONSTRUCTION BMP TRACKING, INSPECTIONS AND ENFORCEMENT

MS4 Permit: §VI.D.7.d.iv

The Participating Agencies must track post-construction BMPs, conduct BMP verification and maintenance inspections and follow the Progressive Enforcement Policy in cases of non-compliance. This improves the effectiveness of the Planning and Land Development program.

INDUSTRIAL/COMMERCIAL FACILITIES PROGRAM

BUSINESS ASSISTANCE PROGRAM AND BMP NOTIFICATION

MS4 Permit: §VI.D.6.c

Measures introduced:

- Notify industrial/commercial owner/operators of applicable BMP requirements.
- Implement a Business Assistance Program to provide technical information to businesses to facilitate their efforts to reduce the discharge of pollutants in stormwater. The business assistance program described in the third term MS4 Permit was an optional provision.

These enhanced measures increase the effectiveness of the Industrial/Commercial Facilities Program.

DEVELOPMENT CONSTRUCTION PROGRAM

ENHANCED CONSTRUCTION PLAN REVIEW PROGRAM

MS4 Permit: §VI.D.8.h, §VI.D.8.i

In general the MS4 Permit introduces provisions that conform to the SWRCB's Construction General Permit. For construction sites one acre or greater, measures include the following:

- Construction activity operators must submit Erosion and Sediment Control Plans (ESCPs) prior to grading permit issuance, developed and certified by a QSD to SWPPP standards.
- Operators must propose minimum BMPs that meet technical standards. The Agencies must provide these standards consistent with MS4 Permit requirements.
- WMG Agencies are required to review and approve ESCPs/CGP SWPPPs.
- Develop procedures and checklists to review and approve relevant construction plans.

These enhanced measures increase the effectiveness of the Development Construction Program, which in turn is expected to reduce TSS loading into the MS4. TSS reduction is an integral component in addressing WQPs.

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ENHANCED INSPECTION STANDARDS/BMP REQUIREMENTS AT CONSTRUCTION SITES

MS4 Permit: §VI.D.8.d, §VI.D.8.i, §VI.D.8.j

Measures introduced:

- Ensure BMPs from the ESCPs are properly installed and maintained.
- Ensure the minimum BMPs for sites less than one acre are installed and maintained.
- Develop and distribute construction brochure (English and Spanish) for sites less than one acre to inform owners and contractors.
- Develop and implement standard operating procedures for stormwater inspections of construction sites.
- Require activity-specific BMPs for paving projects.

These enhanced measures increase the effectiveness of the Development Construction Program, which in turn is expected to reduce TSS loading into the MS4. TSS reduction is an integral component in addressing WQPs.

INCREASED INSPECTION FREQUENCIES

MS4 Permit: §VI.D.8.j

The inspection frequency for construction sites one acre or more has significantly increased. The third term MS4 Permit required a minimum of one inspection during the rainy season. The fourth term MS4 Permit requires monthly inspections year-round, as well as mandatory inspections based on the phase of construction. This enhanced measure increases the effectiveness of the Development Construction Program, which in turn is expected to reduce TSS loading into the MS4. TSS reduction is an integral component in addressing WQPs.

ENHANCED STAFF/CONTRACTOR TRAINING

MS4 Permit §VI.D.7.d.iv.(b), §VI.D.8.l, §VI.D.9.k, §VI.D.10.f

Measures introduced:

- Prescriptive staff training requirements to the Development Construction Program. For example, relevant staff involved with the Construction Program must be knowledgeable in procedures consistent with the State Water Board sponsored Qualified SWPPP Practitioner/Developer (QSP/QSD) program.
- Inspections of structural BMPs under the Development Construction Program must be conducted by personnel trained on Construction General Permit requirements.
- Outside contractors are bound to the same training standards as in-house staff.
- Peninsula WMG staff participate in joint annual trainings regarding the Development Construction Program requirements to promote interagency coordination and improve program effectiveness.

These enhanced provisions increase the overall effectiveness of the jurisdictional stormwater management programs.

ILLICIT CONNECTION AND ILLICIT DISCHARGE (IC/ID) ELIMINATION PROGRAM

ENHANCED IC/ID ENFORCEMENT AND WRITTEN PROGRAM PROCEDURES

MS4 Permit: §VI.D.2, §VI.D.10

Measures introduced:

- Develop and implement a Progressive Enforcement Policy that applies to the IC/ID Elimination, Development Construction, Planning and Land Development and Industrial/Commercial Facilities Programs. The Progressive Enforcement Policy is an augmentation of the policy listed in the third term MS4 Permit, which was restricted to the Industrial/Commercial Facilities Program.
- Maintain written procedures for receiving complaints, conducting investigations and responding to spills.
- Training of all field staff including contractors to identify and report illicit discharges and connections

These enhanced measures increase the effectiveness of the IC/ID Elimination program, as well as the related enforcement components of the Development Construction, Planning and Land Development and Industrial/Commercial Facilities Programs.

ENHANCED STAFF/CONTRACTOR TRAINING

MS4 Permit §VI.D.7.d.iv.(b), §VI.D.8.l, §VI.D.9.k, §VI.D.10.f

Measures introduced:

- Prescriptive staff training requirements to the Illicit Connections and Illicit Discharges Elimination Program. For example, new staff members must be provided with IC/ID training within 180 days of starting employment.
- Contractors performing privatized/contracted municipal services such as, but not limited to, storm and/or sanitary sewer system inspection and repair, street sweeping, trash pick-up and disposal, and street and right-of-way construction and repair are trained regarding IC/ID identification and reporting.
- Outside contractors are bound to the same training standards as in-house staff.

These enhanced provisions increase the overall effectiveness of the jurisdictional stormwater management programs.

PUBLIC INFORMATION AND PARTICIPATION PROGRAM

STORMWATER RESOURCES ON AGENCY WEBSITE

MS4 Permit: §VI.D.5.d.i.(4)

Measures introduced:

- The MS4 Permit introduces a requirement to maintain a stormwater webpage or provide links to stormwater websites via the agency's website. The website (in-house or linked) will include:
 - Educational material and
 - Opportunities for the public to participate in stormwater pollution prevention and clean-up activities.

These enhanced measures increase the effectiveness of the Public Information and Participation program.

ENHANCED PUBLIC EDUCATION

Enhanced Watershed Management Program

MS4 Permit: §VI.D.5.d.i.(4)

Measures introduced:

- Educate the public on Integrated Pest Management
- Implementation of targeted activity-specific residential outreach based on watershed priorities

The Peninsula WMG maintains Environmentally Friendly Landscaping, Gardening and Pest Control webpages targeted at residents that include information on Integrated Pest Management (IPM).

In addition, the Peninsula WMG conducts targeted activity-specific outreach to residents where the WMG has identified a clear need. This direct outreach includes the promotion of successful existing workshops and programs and the development and distribution of dual print/electronic outreach pieces targeted at DIY residential auto, home improvement, landscaping/gardening and pet owner activities. These enhanced measures will increase the effectiveness of the Public Information and Participation program and are described in more detail in Section 3.2.2 Nonstructural Targeted Control Measures below.

PUBLIC AGENCY ACTIVITIES PROGRAM

ENHANCED BMP REQUIREMENTS FOR FIXED FACILITY/FIELD ACTIVITIES

MS4 Permit: §VI.D.9.e

Measures introduced:

- Implement effective source control BMPs for 65 specific pollutant-generating activities such as mudjacking, shoulder grading and spall repair.
- Contractually require hired contractors to implement and maintain the activity specific BMPs. Conduct oversight of contractor activities to ensure the BMPs are implemented and maintained.

These enhanced measures will increase the effectiveness of the Public Agency Activities program.

REPRIORITIZATION OF CATCH BASINS AND CLEAN-OUT FREQUENCIES

MS4 Permit: §VI.D.9.h.iii

In areas not subject to a trash TMDL, measures introduced include the following:

- Determine priority areas and update the map of catch basins with GPS coordinates and priority.
- Include the rationale or data to support the priority designations.

These enhanced measures increase the effectiveness of the Public Agency Activities program.

INTEGRATED PEST MANAGEMENT PROGRAM

MS4 Permit: §VI.D.9.g

The MS4 Permit introduces prescriptive requirements to implement an Integrated Pest Management (IPM) Program for public agency activities and at public facilities. These requirements include adopting and verifiably implementing policies, procedures and/or ordinances that support the IPM program including maintaining an inventory and tracking application of pesticides. Intertwined with the IPM provisions are additional requirements to control and minimize the use of fertilizers. These expansive measures increase the effectiveness of the Public Agency Activities program and address WQPs.

ENHANCED MEASURES TO CONTROL INFILTRATION FROM SANITARY SEWERS

MS4 Permit: §VI.D.9.ix

The MS4 Permit introduces specific requirements to control infiltration from the sanitary sewer into the MS4. The measures include adequate plan checking, preventative maintenance, spill response, enforcement, interagency coordination and staff/contractor education. The requirements are being fulfilled through implementation of a Sewer System Management Plan in accordance with the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

INSPECTION AND MAINTENANCE OF PERMITTEE OWNED TREATMENT CONTROLS

MS4 Permit: §VI.D.9.x

The MS4 Permit introduces requirements to implement an inspection and maintenance program for all Permittee owned treatment control BMPs, including post-construction treatment control BMPs. This measure increases the effectiveness of the Public Agency Activities program and installed structural BMPs.

ENHANCED STAFF/CONTRACTOR TRAINING

MS4 Permit §VI.D.7.d.iv.(b), §VI.D.8.l, §VI.D.9.k, §VI.D.10.f

Measures introduced:

- Prescriptive staff training requirements to the Public Agency Activities Program. For example, training programs must address the least toxic methods of pest prevention and control, including Integrated Pest Management (IPM).
- Employees in targeted positions (whose interactions, jobs, and activities affect storm water quality) must be adequately trained on the requirements of the overall storm water management program.
- Outside contractors are bound to the same training standards as in-house staff

These enhanced provisions increase the overall effectiveness of the jurisdictional stormwater management programs.

3.1.3.3. NONSTORMWATER DISCHARGE MEASURES

The Participating Agencies will require dischargers that drain to their respective MS4s to implement the Nonstormwater Discharge (NSWD) Measures as defined in §III.A of the MS4 Permit. If the Participating Agencies identify nonstormwater discharges from the MS4 as a source of pollutants that cause or contribute to exceedances of receiving water limitations, the WCMs will be modified and implemented – subject to the adaptive management process – to effectively eliminate the source of pollutants consistent with MS4 Permit §III.A and §VI.D.10. In these instances, potential WCMs may include prohibiting the nonstormwater discharge to the MS4, requiring the responsible party to 1) incorporate additional BMPs to reduce pollutants in the nonstormwater discharge or conveyed by the nonstormwater discharge or 2) divert to a sanitary sewer for treatment, or strategies to require the nonstormwater discharge to be separately regulated under a general NPDES permit.

It is important to note that the nonstormwater Outfall Based Screening and Monitoring Program (MRP §IX) introduces additional NSWD measures through the intensive procedures required for the identification of NSWDs from MS4 outfalls.

FOURTH TERM PERMIT NONSTORMWATER DISCHARGE MEASURES

Parts III.A and VI.B (MRP IX) of the MS4 Permit introduce provisions and program elements that address NSWDs. This section briefly describes these enhanced NSWD measures.

Table 3-2 below lists the enhanced nonstructural NSWD measures. The following pages describe each of the listed controls. The details of each provision may be found in the relevant sections of the MS4 Permit, which are included. Unless an alternate date is provided in the MS4 Permit or in this section, the adoption date for the NSWD measures coincides with the approval of the EWMP by the Regional Board’s Executive Officer.

Table 3-2: Enhanced Nonstormwater Discharge MCMs (Participating Agencies, Excluding LACFCD)

Minimum Control Measure	BMP effectiveness with respect to WQPs ³			Agency				
	Priority Pollutant Reduction	Sediment reduction	Volume or flow reduction	LACFCD	County	Palos Verdes Estates	Rolling Hills Estates	Rancho Palos Verdes
Dry weather runoff reduction								
Outfall screening and source investigations	◆	□	◆	X	X	X	X	X
Enhanced conditions for NSWDs, including irrigation reduction	◆	◆	◆	X	X	X	X	X

MCM – Minimum Control Measure

NSWD – Nonstormwater discharge measure

X – Implemented by agency within current MS4 Permit term

◆ Primary pollutant reduction

□ Secondary pollutant reduction

◇ Pollutant not addressed

³ BMP effectiveness ratings based on similar BMPs listed in Tetra Tech’s CLRP for Chollas Creek Watershed in San Diego County, 2012.

OUTFALL SCREENING AND SOURCE INVESTIGATIONS

MS4 Permit: §VI.B (MRP §IX)

Measures introduced:

- Screen outfalls within jurisdictional boundaries to determine significant outfalls.
- Investigate nonstormwater flows to identify potential discharge sources.
- Eliminate or divert illicit discharges or conditionally exempt discharges found to be a source of pollutants.

The outfall screening and source investigation provisions of the MS4 Permit constitute an entirely new, expansive addition to each agency's IC/ID Elimination Program. Implementing these new provisions will significantly support the control of unauthorized nonstormwater discharges.

ENHANCED CONDITIONS FOR EXEMPT NONSTORMWATER DISCHARGES

MS4 Permit: §III.A

The NSW D prohibitions of the MS4 Permit, which include specific measures to reduce irrigation runoff, are a significant enhancement from the third term MS4 Permit. Measures introduced include the following:

- Require the implementation of BMPs following established BMP manuals for discharges from non-emergency firefighting activities and drinking water supplier distribution systems. Require specific BMPs for lake dewatering, landscape irrigation, pool and fountain discharges and non-commercial car washing.
- Require notification, monitoring (i.e. sampling) and reporting for drinking water supplier discharges and lake dewatering greater than 100,000 gallons.
- Require advance notification to the agency from the discharger for any discharge of 100,000 gallons or more into the MS4.
- Minimize discharge of landscape irrigation through implementation of an ordinance specifying water efficient landscaping standards.
- Promote water conservation programs to minimize the discharge of landscape irrigation water into the MS4. This includes the following, where applicable:
 - Coordinate with local water purveyor(s) to promote:
 - Landscape water efficiency requirements for existing landscaping,
 - Drought tolerant, native vegetation, and
 - Less toxic options for pest control and landscape management.
 - Develop and implement a coordinated outreach and education program to minimize the discharge of irrigation water and pollutants associated with irrigation water.
- If monitoring results indicate that a conditionally exempt NSW D is a source of pollutants that causes or contributes to exceedances of applicable receiving water limitations and/or water quality-based effluent limitations, the Permittee must either:
 - Effectively prohibit the nonstormwater discharge to the MS4, or
 - Impose additional conditions, subject to approval by the Regional Water Board Executive Officer, or
 - Require diversion of the NSW D to the sanitary sewer, or
 - Require treatment of the NSW D prior to discharge to the receiving water.

Implementing these enhanced provisions will significantly support the control of unauthorized nonstormwater discharges.

3.2. TARGETED CONTROL MEASURES

Targeted Control Measures (TCMs) are additional control measures beyond the baseline MCMs and NSWDM measures of the MS4 Permit that are intended to target the Peninsula WMG's WQPs. TCMs may be divided into two categories: nonstructural and structural. The selection of structural and nonstructural control measures to address WQPs within the Peninsula WMG is a vital component of the EWMP planning process.

The Participating Agencies have already proposed and implemented a number of structural and nonstructural control measures in the watershed that collectively may contribute to considerable pollutant load reductions. These existing and planned WCMs provide a head start in the planning process to address WQPs within the Peninsula WMG. There are many different types of structural and nonstructural control measures that provide varying benefits from their implementation. The following sections describe Planned TCMs to be implemented, Potential TCMs that may be implemented (implementation is conditional upon factors such as site constraints, governing body approval, etc.) as well types of structural BMPs available to the Peninsula WMG.

3.2.1. CONTROL MEASURES IDENTIFIED IN TMDLS/IMPLEMENTATION PLANS

This section describes the nonstructural control measures that have been previously identified in TMDLs and corresponding implementation plans and the status of their implementation. For those TMDLs that do not sufficiently identify control measures, or if implementation plans have not yet been developed, control measures are identified in the planned Targeted Control Measures as described in the following sections in this chapter. For more information on the TMDLs refer to Section 2: Water Quality Priorities.

SANTA MONICA BAY BEACHES BACTERIA TMDL

To meet the requirements of Santa Monica Bay Beaches Bacteria TMDL, a Coordinated Shoreline Monitoring Plan (CSMP) was developed by a committee of responsible agencies, including representatives from the Peninsula WMG. The Peninsula WMG monitoring sites historically experience fewer exceedance days than used in the TMDL, and are therefore in an anti-degradation condition⁴. As a result, control measures in the approved Implementation Plan include continued implementation of MCMs to protect or enhance existing water quality, and investigation when an excessive number of exceedances occurs at a monitoring site.

SANTA MONICA BAY NEARSHORE AND OFFSHORE DEBRIS TMDL

Compliance with the Santa Monica Bay Debris TMDL is based on installation of structural best management practices such as full capture or partial capture systems, institutional controls, or any best management practices, to attain a progressive reduction in the amount of trash in the Santa Monica Bay. The Cities of Rancho Palos Verdes and Palos Verdes Estates have chosen to comply through the installation of full capture devices in catch basins draining to Santa Monica Bay to meet the final WLA compliance deadline in the TMDL⁵. The City of Rolling Hills Estates has submitted and received approval for a revised Trash Monitoring and Reporting Plan utilizing a combined approach to demonstrate compliance with waste load allocations for trash in both the Santa Monica Bay and Machado Lake TMDLs through the completed installation of full capture systems in 100% of the catch basins in the commercial and high-

⁴ The antidegradation policy applies to waters that are determined to have high water quality and requires that existing high quality be maintained.

⁵ Reconsideration of the TMDL or the WQBEL in the Permit to conform to the Statewide Trash Policy would result in a modification to the implementation of these control measures.

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density residential areas of the City, and a comprehensive program of institutional controls and Minimum Frequency of Assessment and Collection (MFAC) in other land use areas where installation of full capture devices is not technically feasible.

On December 13, 2017, the Peninsula WMG members requested a change in the implementation schedule of the EWMP. The Peninsula WMG has been fortunate to secure grant funding through the Proposition 84 Clean Beaches/Santa Monica Bay Restoration Grant Program to fund approximately 60% of the cost of installation of certified full capture trash devices throughout the Santa Monica Bay watershed area, with the balance of the cost to be drawn from each city's general fund. This grant funding enables the Peninsula WMG to install full capture systems for trash in catch basins throughout the Peninsula WMA to complete the attainment of the final Santa Monica Bay Debris TMDL waste load allocations under an expedited schedule utilizing a single contracting mechanism. The schedule modification request was approved by the Regional Board on February 12, 2018.

Table 5-2, "TMDL and 303(d) WBPC Interim (I), Final (F) and Action (A) Compliance Milestones," has been revised to change the March 20, 2018 and 2019 interim milestones from "% reduction in trash from baseline" to "Action Compliance Milestones". Specifically, the March 20, 2018 and 2019 milestones have been replaced by the following two action items:

- Execution of an MOU among project partners for implementation and cost-sharing of the Prop 84 Santa Monica Bay Restoration/Clean Beaches Santa Monica Bay Catch Basin Insert Project by August 20, 2018.
- Complete 50% of full capture system installations by August 20, 2019.

The final milestone of March 20, 2020 for achievement of 100% reduction in trash from baseline through the installation of full capture devices in all catch basins draining to the Santa Monica Bay remains unchanged.

SANTA MONICA BAY DDT & PCBs TMDL

The MS4 Permit requires routine stormwater sampling at mass emissions stations throughout LA County. Sampling is conducted by the Los Angeles County Department of Public Works, and typically includes four wet-weather events and four dry-weather events per year at these mass emission stations. In the Santa Monica Bay Watershed, the Ballona Creek and Malibu Creek mass emission stations are the two closest to the Peninsula EWMP area. Neither of these stations has detected DDT or PCBs since the mid-90s⁶.

Estimated stormwater loads from Santa Monica Bay watersheds were found to be lower than TMDL calculated allowable loads to achieve sediment targets; therefore, the waste load allocations for DDT and PCBs are based on existing load estimates, and the MS4 dischargers are essentially in an anti-degradation condition⁷.

MACHADO LAKE TRASH TMDL

There are two alternatives for responsible jurisdictions to achieve compliance with waste load allocations in the Machado Lake Trash TMDL, either implement full capture systems or implement a Minimum Frequency of Assessment and Collection (MFAC) program. The agencies within the Peninsula WMG have

⁶ According to the Santa Monica Bay DDT and PCBs TMDL, there were no detectable concentrations of DDT in stormwater samples from 1994 to 2005 (LADPW, 2005). Similar results were found for DDT in Malibu (1997 to 2005); Los Angeles Department of Public Works (LADPW) has not indicated detectable levels of PCBs in stormwater from Ballona or Malibu since the mid 1990s. The detection levels used in the LA County Mass Emission sampling are 2 & 3 orders of magnitude larger than the California Ocean Plan human health criteria for DDT and PCBs respectively.

⁷ USEPA: Santa Monica Bay DDT and PCBs TMDL

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chosen to comply through the installation of full capture devices in catch basins draining to Machado Lake. These devices were installed in accordance with the compliance schedule outlined in the TMDL⁸.

- The County retrofitted all identified catch basins in the unincorporated area of the Machado Lake drainage area.
- The City of Rolling Hills Estates has submitted and received approval for a revised Trash Monitoring and Reporting Plan utilizing a combined approach to demonstrate compliance with waste load allocations for trash in both the Santa Monica Bay and Machado Lake TMDLs through the completed installation of full capture systems in 100% of the catch basins in the commercial and high-density residential areas of the City, and a comprehensive program of institutional controls and Minimum Frequency of Assessment and Collection (MFAC) in other land use areas where installation of full capture devices is not technically feasible.
- The City of Rancho Palos Verdes is complying with the Machado Lake Trash TMDL through a combination of full capture systems and institutional controls. The percent reduction in trash discharge was determined through a mass balance approach, based on a daily generation rate (DGR) study as described in the Permit. The study showed a trash loading reduction of 99.3% from the baseline allocation, demonstrating effective compliance with the final water-quality based effluent limitation. demonstrating effective compliance with the final water-quality based effluent limitation.
- The area of the City of Palos Verdes Estates tributary to Machado Lake is approximately 250 acres with land use comprised of R-1 single family residences, one public school site and open space -- due to low rates of trash generation such land use areas are considered as non-priority under the Statewide Trash Policy. The City has chosen to demonstrate compliance through the use of full capture systems. Additionally, the City maintains a proactive litter abatement program and an intensive program of institutional controls. The City is demonstrating full compliance with the final Machado Lake WLAs for trash through 99% retrofit with full capture systems and intensive institutional controls.

⁸ Reconsideration of the TMDL or the WQBEL in the Permit to conform to the Statewide Trash Policy would result in a modification to the implementation of these control measures.

3.2.2. NONSTRUCTURAL TARGETED CONTROL MEASURES

Pursuant to Part VI.C.1.a of the MS4 Permit, the Peninsula WMG has developed customized strategies, control measures and BMPs to implement the requirements of the MS4 Permit. Addressing WQPs will be based on a multi-faceted strategy initially focused on source control. If pollutants are not generated or released, they will not be available for transport to the receiving waters. In addition, if soils can be stabilized, sediment controlled, and dry-weather runoff and initial flushes of stormwater runoff eliminated or greatly reduced, the major transportation mechanisms will be eliminated or greatly reduced, and fewer pollutants will reach the receiving waters.

Many of the highest WQPs, such as copper, lead, and zinc, are released into the atmosphere, resulting in widespread aerial deposition onto impervious surfaces in the Watershed. In addition, these pollutants are discharged directly onto streets, highways, parking lots, and driveways from motor vehicle components such as brakes, wheel weights, and tires. The Participating Agencies have concluded that the most cost-effective and long-lasting way to address WQPs is to develop and support state-wide or regional measures that will encourage or require, if necessary, product or material substitution at the manufacturing stage. This can be a complex and time-consuming process, but the payoff in water quality improvement can be tremendous.

The nonstructural TCMs described below supplements the MCM efforts with targeted source control measures such as incentives for irrigation control and upgraded street sweeping equipment, designed with the objective of achieving interim and final water quality-based effluent limitations and/or receiving water limitations. Implementation of the nonstructural TCMs described below constitutes a load reduction of 2.5% in the RAA (higher reductions may be realized).

Table 3-3 lists planned and potential nonstructural TCMs for each participating agency. The BMP effectiveness from Table 3-3 is based on similar BMPs listed in Tetra Tech's CLRP for Chollas Creek Watershed in San Diego County, 2012.

The responses for each agency under Table 3-3 are defined as follows:

- X** *Planned TCM.* Under the presumption that 1) the TCM will likely not require approval of the governing body and 2) the governing body approves adequate staff/budget (if necessary), the TCM will be implemented.
- R** *Regulatory TCM.* The TCM is to be implemented through legislative measures that have the support of the Peninsula WMG.
- P** *Potential TCM.* The TCM is under consideration by the agency, however implementation is contingent upon yet to be determined factors. These factors include approval by the governing body, additional time needed to inform the governing body and/or relevant staff and approval of service contracts. As such implementation cannot be assured at this time. If the Potential TCM is not adopted by the agency within the first two years of the implementation of the EWMP, it will be reconsidered through the adaptive management process.
- C** *Completed TCM.* The TCM is preexisting (has been in effect for several years or more).

Table 3-4 lists the anticipated pollutants to be addressed through each Nonstructural TCM. The pages following Table 3-4 describe each of the listed controls. It is important to note that the LACFCD are operating regional stormwater programs and consequently incorporating localized institutional TCMs may not be feasible. As such their exclusion from such TCMs is justified.

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Table 3-3: Nonstructural Targeted Control Measures (TCMs)

Targeted Control Measure	BMP effectiveness with respect to WQPs ⁹			LACFCD	County Unincorporated	Agency		
	Priority Pollutant Reduction	Sediment reduction	Volume or flow reduction			Palos Verdes Estates	Rancho Palos Verdes	Rolling Hills Estates
Planning and Land Development								
LID and Green Streets Staff Training	□	□	□	N/A	C	C	C	C
Industrial/Commercial Facilities								
Clean Bay Restaurant Program	◆	◇	□	N/A		C	C	C
Downspout Disconnect Program	□	□	◆	N/A	C	C	C	C
Dry weather runoff reduction								
Irrigation Reduction Incentives Program	◆	◆	◆	N/A	C	C	C	C
Public Information and Participation								
Targeted Outreach	◆	◆	◆	C	C	C	C	C
Horse Manure Management	◆	◇	◇	N/A	C	N/A	C	C
Public Agency Activities								
Enhanced Street Sweeping	◆	◆	◇	N/A	C	C	C	
Adopt Sewer System Management Plan (SSMP)	◆	◇	◇	N/A	C	C	C	C
Increased Street Sweeping Frequency or Routes	◆	◆	◇	N/A		C		C
Erosion Repair and Slope Stabilization Program	□	◆	◇	N/A	N/A	X	X	X
Jurisdictional SW Management								
Prepare guidance documents to aid in implementation of MS4 Permit MCMs	□	□	□	C	C	C	C	C
Initiatives								
Brake Pad Replacement Program	◆	◆	◇	R	R	R	R	R
Lead Reduction Program	◆	◆	◇	R	R	R	R	R
Zinc Reduction Program	◆	◆	◇			Watershed Group		
Apply for grant funding for stormwater quality/capture projects	◆	◆	◆	C	C	C	C	C
Ordinances								
Water Efficient Landscaping	◆	◇	◆	N/A	C	C	C	C
Private Road and Parking Lot Sweeping	◆	◆	◇	N/A			P	
Green Building Ordinance	◆	□	□	N/A			C	
Enhanced Irrigation Runoff Reduction Program	◆	□	◆	N/A	C	C	C	C

X – Planned TCM

P – Potential TCM

C – Completed/Implemented TCM

◆ Primary pollutant reduction

□ Secondary pollutant reduction

◇ Pollutant not addressed

⁹ BMP effectiveness ratings based on similar BMPs listed in Tetra Tech’s CLRP for Chollas Creek Watershed in San Diego County, 2012.

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Table 3-4: Anticipated Pollutants to be addressed through Nonstructural TCMs.

Targeted Control Measure	Category 1							Category 2					
	SMB Bacteria	SMB Debris	SMB DDT & PCBs	ML Trash	ML Pesticides & PCBs	ML Nutrients	Harbor Toxics	Copper (WD)	Lead (WD)	Coliform Bacteria (WD)	Chem A (ML)	Pesticides (SP)	Sediment Toxicity (SMB)
LID and Green Streets Staff Training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Clean Bay Restaurant Program	✓	✓		✓		✓				✓			
Downspout Disconnect Program		✓		✓		✓	✓	✓	✓				
Irrigation Reduction Incentives Program	✓	✓		✓		✓	✓	✓	✓	✓			
Targeted Outreach	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Horse Manure Management	✓					✓				✓			
Enhanced Street Sweeping		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Adopt Sewer System Management Plan	✓					✓		✓	✓	✓			
Increased Street Sweeping Frequency or Routes		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Erosion Repair and Slope Stabilization Program		✓	✓		✓		✓	✓	✓				✓
Prepare Guidance Documents	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Brake Pad Replacement Program							✓	✓					
Lead Reduction Program							✓		✓				
Zinc Reduction Program							✓						
Apply for Grant Funding	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Water Efficient Landscaping	✓	✓		✓		✓	✓	✓	✓	✓		✓	
Private Road and Parking Lot Sweeping		✓		✓			✓	✓	✓				✓
Green Building Ordinance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Enhanced Irrigation Runoff Reduction Program	✓	✓		✓		✓	✓	✓	✓	✓			

SMB – Santa Monica Bay; ML – Machado Lake; WD – Wilmington Drain; Harbor – Los Angeles Harbor; SP – Palos Verdes Shoreline Park

PLANNING AND LAND DEVELOPMENT

LID AND GREEN STREETS STAFF TRAINING

This TCM focuses on training the agency staff how to facilitate LID and Green Streets implementation. Training will be conducted for relevant staff in LID and Green Streets implementation prior to the onset of the programs. The elements of the training follow the provisions listed in MS4 Permit §VI.D.7. Additionally, the agencies will educate governing bodies, including the Planning Commissions, in LID and Green Streets implementation. Each agency is currently implementing this program.

INDUSTRIAL/COMMERCIAL FACILITIES

CLEAN BAY RESTAURANT CERTIFICATION PROGRAM

The Clean Bay Restaurant Certification Program, established by the Santa Monica Bay Restoration Commission (SMBRC), works to educate restaurants on clean restaurant practices, including proper disposal of wastes and spill prevention. Through the program, agencies incentivize restaurants to go above and beyond local stormwater regulations to help prevent pollution. The certification program recognizes food service establishments that receive a score of 100% on the program's criteria checklist by providing a window decal and public recognition from the Mayor.

This program is applicable to those agencies located within the Santa Monica Bay watershed. The program is currently being implemented by the City of Rancho Palos Verdes, Palos Verdes Estates, and Rolling Hills Estates.

DOWNSPOUT DISCONNECT PROGRAM

This TCM plans to encourage owners and operators of existing developments to retrofit their downspouts through a downspout disconnect or rain barrel program. This program is currently being implemented for the Peninsula WMG through the West Basin Municipal Water District.

DRY WEATHER RUNOFF REDUCTION

IRRIGATION REDUCTION INCENTIVES PROGRAM

This measure will provide incentives such as rebates for irrigation reduction (i.e. runoff reduction) practices such as xeriscaping and turf conversion. All agencies are currently involved in this effort through the West Basin Municipal Water District rebate incentives program.

PUBLIC INFORMATION AND PARTICIPATION

TARGETED OUTREACH

Within the Public Information and Education Program, targeted activity-specific residential outreach is conducted to address watershed priorities. This targeted outreach effort is focused on residential do-it-yourself (DIY) auto, home improvement, and gardening activities and pet owner activities and is implemented through the promotion of successful existing workshops and programs and the development and dissemination of dual print/electronic outreach pieces targeted at residential activities for which City staff have identified a clear need. The targeted residential outreach includes:

- Promotion of the CalRecycle Used Oil Collection and Filter Recycling Program
- Promotion of sustainable landscaping, gardening and water efficiency programs offered through West Basin Municipal Water District
- Waste management and recycling outreach

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- Promotion/hosting of household hazardous waste collection events
- Development and distribution of outreach pieces including a dual print/digital mobile business tip card, small site construction brochure, and a print brochure showcasing Native and Drought Tolerant Plant Gardens and Landscapes on the Palos Verdes Peninsula
- Maintenance and promotion of Environmentally Friendly Landscaping, Gardening and Integrated Pest Management outreach webpages
- Maintenance of California-friendly demonstration gardens throughout the Peninsula
- Maintenance of pet waste stations in municipal parks

HORSE MANURE MANAGEMENT

Where residential horse keeping is allowed, the Peninsula WMG agencies implement and enforce Horse Manure Management ordinances requiring the proper handling and disposal of horse manure to prevent its accumulation, runoff, or leaching. Peninsula WMG agencies that allow residential horse keeping also provide manure collection services through the solid waste contract. Additionally, public outreach pamphlets describing stormwater BMPs for horse keeping are distributed throughout the Peninsula. These efforts work to address pollutants generated from existing equestrian facilities which are a recognized source of nutrients. In Rolling Hills Estates, the completed Model Equestrian Center Project at the Peter Weber Equestrian Center (PWEC) serves an educational function in addition to the water quality improvements realized through retrofits to the facility. Interpretive signage throughout the PWEC identifies horse keeping BMPs for owners of horses boarded at the facility, horse trainers, and children who attend pony camps at the facility (as well as their parents). Pony camp materials used at the facility have been updated with worksheets on environmentally friendly horse keeping practices.

PUBLIC AGENCY ACTIVITIES

ENHANCED STREET SWEEPING

Improved street and median sweeping technology enhances the potential for wet weather pollutant load reductions for bacteria, metals, non-metal toxics, and nutrients. Increasing the sweeping frequency, increasing the area of impervious cover swept, or upgrading the sweeping equipment can result in an increase in pollutant load removal¹⁰. Most of the Peninsula Agencies contract street sweeping to private companies. These companies have already phased in regenerative sweepers.

Regenerative air sweepers have the ability to clean a larger path than vacuum sweepers, can remove smaller debris more efficiently and release less exhaust and particulates back into the environment. Generally speaking, regenerative air systems are more environmentally friendly than are vacuum sweepers. Regenerative air sweepers are similar to vacuum sweepers in that there is a suction tube located on one side of the sweeping head. However, the key difference between regenerative and vacuum sweepers is that, unlike vacuum sweepers which exhaust the particulate-laden used air back into the atmosphere, regenerative air sweepers work on a closed loop system. In most applications, they also are a better choice than are vacuum sweepers. As the regenerative air sweepers circulate the air on a continuous basis.¹¹

¹⁰ City of San Diego: San Diego River Watershed Comprehensive Load Reduction Plan – Appendix A: BMP Representation Summary (2012)

¹¹ An Overview of Power Sweeping Equipment Technology (www.worldsweeper.com)

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The cities of Palos Verdes Estates and Rancho Palos Verdes have already begun implementation of this program. Additionally, the County of Los Angeles has incorporated regenerative sweepers in its street cleaning program.

ADOPT SEWER SYSTEM MANAGEMENT PLAN (SSMP)

All agencies are enrolled in the statewide Waste Discharge Requirements for Sanitary Sewer Systems, which required the development and implementation of a SSMP in mid 2009. The goal of the SSMP is to reduce and prevent sanitary sewer overflows (SSOs), as well as mitigate any SSOs that do occur. This goal also addresses WQPs. Elements of the SSMP include:

- Sanitary sewer system operation and maintenance program
- Design and performance provisions
- Overflow emergency response plan
- FOG Control Program
- System Evaluation and Capacity Assurance Plan

INCREASED STREET SWEEPING FREQUENCY OR ROUTES

This TCM works to increase the street sweeping frequency, jurisdiction-wide or in high trash-generating areas and/or include additional routes (e.g. center medians and intersections).

EROSION REPAIR AND SLOPE STABILIZATION PROGRAM

The Erosion Repair and Slope Stabilization Program will result in public property and right of way erosion repair and slope stabilization. This TCM will work to implement landscaping, erosion control, and sediment control on significant sources of exposed dirt on public property.

The cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates plan to begin implementation of this program by December 2016.

JURISDICTIONAL STORMWATER MANAGEMENT

PREPARE GUIDANCE DOCUMENTS TO AID IMPLEMENTATION OF MS4 PERMIT MCMs

Guidance documents and template forms have been developed to aid in implementation of the MS4 Permit MCMs, some of which can be found in Appendix 2. These documents were developed to address two issues: 1) the MS4 Permit introduces many enhanced MCM provisions that do not have preexisting guidance documentation and 2) the model Stormwater Quality Management Program (SQMP) – which was required in the third term MS4 Permit and served as a guide to permit implementation – is now obsolete. Unlike the SQMP in the third term permit, the Agencies are not bound to the guidance and forms provided. The guidance was developed as a resource for the agencies to improve the effectiveness of the jurisdictional stormwater management programs.

INITIATIVE**BRAKE PAD REPLACEMENT PROGRAM**

The recent efforts of the California Stormwater Quality Association (CASQA) and Sustainable Conservation led to the passage of the SB 346 legislation in 2010 and signed by the Governor on September 25, 2010. This legislation is a milestone that will significantly reduce the level of copper in metropolitan area waters throughout the state. SB 346 requires incremental reduction in the amount of copper in vehicle brake pads, which constitute the single largest source of copper in metropolitan environments¹². Already in effect, new codes required on brake pads sold in California will provide information on copper content and a notice that on and after January 1, 2014 any motor vehicle brake friction materials sold in California must contain no more than 0.1 percent by weight of the following materials: cadmium and its compounds, chromium (VI) salts, lead and its compounds, mercury and its compounds, and asbestiform fibers.

According to industry data on brake pad copper content, “SB 346 should reduce annual statewide copper emissions by more than 1.2 million pounds per year and should reduce brake pad copper levels by about 95%”¹³. Additionally, based on available information, which was largely developed through a lengthy collaboration among brake pad manufacturers, government agencies, and environmental groups in the Brake Pad Partnership, a preliminary estimate of copper runoff reduction due to this piece of legislation was developed. In 2012, TDC Environmental LLC prepared a draft detailed memo (TDC memo) describing the expected percent reduction of Copper reductions (see Appendix 3). The TDC memo identifies 3 possible implementation scenarios:

Scenario 1 (One Step Reduction) – All new vehicles and replacement brake pads are reformulated to contain less than 0.5% Copper by January 1, 2021 (first SB 346 compliance deadline).

Scenario 2 (Two Step Reduction) – New vehicle brake pads are reformulated to contain less than 5% copper by January 1, 2021 and less than 0.5% Copper by 2025. It would be assumed that all higher Copper replacement brakes would be sold within two years of each compliance date.

Scenario 3 (Aftermarket Exemption) – New vehicle brake pads are reformulated to contain less than 5% copper by January 1, 2021 and less than 0.5% copper by 2025. This scenario assumes that higher Copper replacement brakes would continue to be sold indefinitely.

All scenarios were then analyzed over a fourteen-year period. The TDC memo determines the following copper reductions by the year 2032:

Scenario 1: 61% Copper reduction

Scenario 2: 61% Copper reduction

Scenario 3: 55% Copper reduction

The Greater Harbors Toxics TMDL final compliance deadline is in 2032; therefore, using Scenario 3 (the most conservative approach), a reduction of 55% has been assumed in the RAA model.

¹² Moran, Kelly. 2011. Brake Pad Copper Reduction – MRP Section C.13.c. Report 2011

¹³ Ibid.

LEAD REDUCTION PROGRAM

The SB 346 legislation was passed by the Senate, approved by the Governor, and filed with the Secretary of State on October 11, 2010. This bill prohibits the manufacture, sale, or installation in California of a wheel weight that contains more than 0.1% lead. Additionally, this bill requires that if the department identifies an alternative to lead contained in wheel weights as a chemical of concern, then the lead alternative would remain subject to the evaluation process, as prescribed, to determine how best to limit exposure or to reduce the level of hazard posed by the lead alternative.

Through the implementation of SB 757, a reduction in lead will be observed for the Peninsula WMG.

ZINC REDUCTION PROGRAM

The Department of Toxic Substances Control (DTSC) adopted new Safer Consumer Product Regulations that became effective October 1, 2013. These regulations contain a process for identifying and prioritizing Chemicals of Concern in Priority Products containing these constituents, as well as a process for eliminating or reducing the adverse impacts of Chemicals of Concern in Priority Products. It will apply to most consumer products placed into the stream of commerce in California. It specifically applies to adverse environmental impacts, including adverse water quality impacts, and it contains a petition process for identification and prioritization of chemicals and projects. CASQA, supported by Peninsula WMG, has started the process of conducting research and building a file of critical information to support the designation of zinc in tires as a future priority product/constituent combination.

Measures:

- As a watershed group, plan to work with others to use the Department of Toxic Substances Control's Safer Consumer Product Regulations to reduce the zinc in tires, which is one of the greatest sources of zinc in urban areas.

APPLY FOR GRANT FUNDING FOR STORMWATER CAPTURE PROJECTS

Agencies have and will continue to initiate Individual or multi-jurisdictional efforts to apply for grant funding for stormwater quality/capture projects.

ORDINANCES

WATER EFFICIENT LANDSCAPING ORDINANCE

The Peninsula WMG agencies currently implement and enforce water efficient landscaping ordinances to promote the design, installation, and maintenance of landscaping in a manner that conserves water resource and minimizes irrigation water runoff.

Additionally, the Peninsula Agencies jointly developed and have been distributing a tri-fold color brochure promoting Native & Drought Tolerant Plant Gardens and Landscapes on the Palos Verdes Peninsula. This brochure was developed with input from the Palos Verdes Peninsula Land Conservancy, Los Angeles County Fire Department and South Coast Botanic Garden staff.

PRIVATE ROAD AND PARKING LOT SWEEPING ORDINANCE

This TCM aims to adopt and implement an ordinance that requires sweeping of private parking lots. The control measure would work to proactively enforce the existing stormwater ordinance regarding sediment laden stormwater discharges (or potential discharges) for private roads and parking lots and follow the Progressive Enforcement Policy. This may include observing site conditions prior to rain events and visual monitoring of stormwater discharges.

GREEN BUILDING ORDINANCE

The City of Rancho Palos Verdes, the largest of the Peninsula WMG agencies, implements a Green Building Construction ordinance, effective January 1, 2014, that establishes incentives such as expedited plan review and fee reductions, and outlines procedures for participation in the agency’s voluntary green building program. This program encourages the design and development of single-family, multifamily residential, commercial, institutional and mixed-use projects that are sited, designed, constructed and operated to enhance the well-being of occupants, and to minimize negative impacts on the community and natural environment. In addition, all of the Peninsula WMG agencies have adopted or customized the 2010 California Green Building Standards Code.

The Green Building Ordinance is based on a point system in which a developer earns points for incorporating certain aspects of the program into their design. Some of the specific stormwater quality aspects of this program are identified below:

Category	Stormwater Benefit
Stormwater Control: <ul style="list-style-type: none"> • Permeable Paving Material • Filtration and/or Bio-Retention Features • Non-Leaching Roofing Materials • Smart Stormwater Street Design • Rainwater Harvesting System • Vegetated Roof 	Encourages incorporation of stormwater BMPs which directly benefits stormwater quality
Irrigation Control: <ul style="list-style-type: none"> • Plants Grouped by Water Needs • Resource Efficient Landscapes • High-Efficiency Irrigation System 	Reduces irrigation demand which subsequently reduces dry weather flows
Impervious Area Reduction: <ul style="list-style-type: none"> • Construction Footprint • Minimal Turf in Landscape • Trees 	Reduces impervious areas which subsequently reduces stormwater runoff
Non-toxic Materials	Reduces exposed toxic materials during and after construction
Vandalism Deterrence Practices and Vandalism Management Plan	Reduces the potential for vandalism which subsequently reduces the potential for exposed contaminants associated with vandalism (i.e. spray paint, trash, etc.)
Pedestrian, bicycle, and public transit access	Reduces vehicle use which subsequently reduces pollutants associated with vehicles (i.e. organics, oil, grease, metals, etc.)
Structural Pest Controls	Reduces likeliness of needing pest-control which subsequently reduces potential for related contaminants to be exposed to stormwater
Green Building Education	Increases environmental awareness including stormwater quality

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ENHANCED IRRIGATION RUNOFF REDUCTION PROGRAM

Reductions to irrigation runoff help to achieve runoff volume reduction and associated pollutant load reductions. This BMP, which doubles as a water conservation initiative, incorporates good landscaping practices to limit irrigation runoff. Measures to reduce irrigation runoff can be implemented wherever landscapes are irrigated. Residential, commercial, recreational, and industrial land uses can be targeted by incentive policies and programs. The Peninsula WMG agencies already implement Water Efficient Landscaping ordinances. Additional implementation methods being implemented include:

- Municipal Landscape Retrofits converting municipal landscaping to drought tolerant, low irrigation landscaping
- Landscape Irrigation Efficiency Program for large landscape residential water users
- Weather-based irrigation controller exchange events through West Basin Municipal Water District
- Turf Conversion Programs implemented through West Basin Municipal Water District to encourage the conversion of lawns and gardens to drought tolerant, low irrigation landscaping
- California Friendly Landscape Workshops through West Basin Municipal Water district and South Bay Environmental Services Center
- Rainbarrel distribution through South Bay Environmental Services Center

The County of LA and the cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates are currently implementing this program.

3.2.3. STRUCTURAL TARGETED CONTROL MEASURES

Structural TCMs are Structural BMPs that, in combination with MCMs, are designed with the objective to achieve interim and final water quality-based effluent limitations and/or receiving water limitations. Structural TCMs are an important component of the Peninsula WMG's load reduction strategy. These BMPs are constructed to capture runoff and filter, infiltrate, or treat stormwater. If properly maintained, these BMPs can have high pollutant removal efficiencies (see the *Performance Evaluation of Structural BMPs* element of this section); however, they tend to be more expensive than nonstructural BMPs. The two prevailing approaches for implementing Structural BMPs are regional and distributed approaches. Both serve important purposes and should be considered in combination to determine the best possible implementation strategy to meet the Peninsula WMG's water quality goals.

DISTRIBUTED BMPs

Distributed Structural BMPs are generally built at the site-scale. They are intended to treat stormwater runoff at the source and usually capture runoff from a single parcel or a small area consisting of multiple parcels and public rights of way.

REGIONAL BMPs

Regional BMPs refer to large structural BMPs that receive flows from neighborhoods or large areas and may provide additional benefits such as for flood control or groundwater recharge¹⁴.

3.2.4. STRUCTURAL BMP SUBCATEGORIES

Structural BMPs fall under a variety of subcategories that correspond to their function and water quality benefit. Some of the most common of these subcategories are described below. These subcategories will be used throughout the EWMP to describe existing, planned, and potential regional and distributed BMPs.

INFILTRATION BMPs

Infiltration BMPs allow for stormwater to percolate through the native soils and recharge the underlying groundwater table, subsequently decreasing the volume of water discharged to the downstream waterbodies. These BMPs must be constructed in areas where the native soils have percolation rates and groundwater levels appropriate for infiltration.

INFILTRATION BASIN

An infiltration basin consists of an earthen basin with a flat bottom. An infiltration basin retains stormwater runoff in the basin and allows the retained runoff to percolate into the underlying soils. The bottom of an infiltration basin is typically vegetated with dryland grasses or irrigated turf grass.

INFILTRATION TRENCH

An infiltration trench is a long, narrow, rock-filled trench with no outlet other than for overflow. Runoff is stored in the void space between stones and infiltrates through the bottom and sides of the trench. Infiltration trenches provide the majority of their pollutant removal benefits through volume reduction. Pretreatment is important for limiting amounts of coarse sediment entering the trench which can clog and render the trench ineffective.

¹⁴ San Diego River Watershed Comprehensive Load Reduction Plan (2012)

BIORETENTION WITH NO UNDERDRAIN

Bioretention facilities with no underdrain are landscaped shallow depressions that capture and infiltrate stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, engineered media, and vegetation. As stormwater passes down through the media, pollutants are filtered, adsorbed, and biodegraded by the soil and vegetation.

DRYWELL

Drywells are similar to infiltration trenches in their design and function; however, drywells generally have a greater depth to footprint area ratio and can be installed at relatively deep depths. A drywell is a subsurface storage facility designed to temporarily store and infiltrate runoff. A drywell may be either a small excavated pit filled with aggregate or a prefabricated storage chamber or pipe segment.

POROUS PAVEMENT

Porous pavements (concrete, asphalt, and pavers) contain small voids that allow water to pass through to a gravel base. They come in a variety of forms; they may be a modular paving system (concrete pavers, grass-pave, or gravel-pave) or poured in place pavement (porous concrete, permeable asphalt). Porous pavements treat stormwater and remove sediments and metals within the pavement pore space and gravel base. While conventional pavement results in increased rates and volumes of surface runoff, properly constructed and maintained porous pavements allow stormwater to percolate through the pavement and enter the soil below. This facilitates groundwater recharge while providing the structural and functional features needed for the roadway, parking lot, or sidewalk. The paving surface, subgrade, and installation requirements of porous pavements are more complex than those for conventional asphalt or concrete surfaces.

BIOTREATMENT BMPs

Biotreatment BMPs treat stormwater through a variety of physical, chemical, and biological processes prior to being discharged to the MS4 system. These BMPs should be considered where Infiltration BMPs are infeasible.

BIORETENTION WITH UNDERDRAINS

Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, engineered media, and vegetation. As stormwater passes down through the media, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and vegetation. Bioretention with underdrain systems are utilized for areas containing native soils with low permeability or steep slopes, where the underdrain system routes the treated runoff to the storm drain system.

VEGETATED SWALES

Vegetated swales are open, shallow channels with low-lying vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. Vegetated swales provide pollutant removal through settling and filtration in the vegetation (usually grasses) lining the channels. In addition, although it is not their primary purpose, vegetated swales also provide the opportunity for volume reduction through subsequent infiltration and evapotranspiration and reduce the flow velocity. Where soil conditions allow, volume reduction in vegetated swales can be enhanced by adding a gravel drainage layer underneath the swale allowing additional flows to be retained and infiltrated. Where slopes are shallow and soil conditions limit or prohibit infiltration, an underdrain system or low flow channel for dry weather flows may be required to minimize ponding and convey treated and/or dry weather flows to an acceptable discharge point. An effective vegetated swale achieves uniform sheet flow through a densely vegetated area for a period of several minutes (depending on design standard used).

WET DETENTION BASIN

Wet detention basins are constructed, naturalistic ponds with a permanent or seasonal pool of water (also called a “wet pool” or “dead storage”). Aquascape facilities, such as artificial lakes, are a special form of wet pool facility that can incorporate innovative design elements to allow them to function as a stormwater treatment facility in addition to an aesthetic water feature. Wet ponds require base flows to exceed or match losses through evaporation and/or infiltration, and they must be designed with the outlet positioned and/or operated in such a way as to maintain a permanent pool. Wet ponds can be designed to provide extended detention of incoming flows using the volume above the permanent pool surface.

DRY EXTENDED DETENTION BASIN

Dry extended detention basins are basins whose outlets have been designed to detain the stormwater runoff to allow particulates and associated pollutants to settle out. Dry extended detention basins do not have a permanent pool; they are designed to drain completely between storm events. They can also be used to provide hydromodification and/or flood control by modifying the outlet control structure and providing additional detention storage. The slopes, bottom, and forebay of Dry extended detention basins are typically vegetated.

PRE TREATMENT BMPs

Pre-treatment BMPs are typically not used as primary treatment; however, they are highly recommended for preliminary treatment in order to prolong the life and prevent clogging of the downstream system in a treatment train.

MEDIA FILTERS

Media filters are usually designed as multi-chambered stormwater practices; the first is a settling chamber, and the second is a filter bed filled with sand or another filtering media. As stormwater flows into the first chamber, large particles settle out, and then finer particles and other pollutants are removed as stormwater flows through the filtering medium. They can also be used as pre-treatment, with their location prior to any infiltration or biotreatment BMP.

CATCH BASIN INSERTS

Catch basins inserts typically include a grate or curb inlet and a sump to capture sediment, debris, and pollutants. Filter fabric can also be included to provide additional filtering of particles. The effectiveness of catch basin inserts, their ability to remove sediments and other pollutants, depends on its design and maintenance. Some inserts are designed to drop directly into existing catch basins, while others may require retrofit construction. Similar to media filters, catch basin filters can also be used as a pre-treatment BMP for infiltration and biotreatment BMPs.

RAINFALL HARVEST

Rainfall Harvest BMPs capture rainwater to be reused in lieu of discharging directly to the MS4.

ABOVE GROUND CISTERNS

Cisterns are large above ground tanks that store stormwater collected from impervious surfaces for non-potable domestic consumption. Above ground cisterns are used to capture runoff. Mesh screens are typically used to filter large debris before the stormwater enters the cistern. The collected stormwater could potentially be used for landscape irrigation and some interior uses, such as toilets and washing machines. The collection and consumption of the stormwater results in pollution control, volume reduction, and peak flow reduction from the site.

UNDERGROUND DETENTION

Underground detention systems function similarly to above ground cisterns in that they collect and use stormwater from impervious surfaces. These systems are concealed underground and can allow for larger stormwater storage and capture additional impervious surfaces not easily captured in an above ground system (e.g. parking lots and sidewalks).

DIVERSION SYSTEMS

LOW FLOW DIVERSION

Flow diversion systems collect and divert runoff. Flow diversion structures can primarily be used in two ways. First, flow diversion structures may be used to direct dry weather flows to a treatment facility, preventing the runoff from reaching a receiving water body. This is typically done with low flow runoff, which occurs during periods of dry weather. Second, flow diversion structures can also be modified by incorporating them into other BMPs. For example, diverted flow can be fed into a regional BMP. Properly designed stormwater diversion systems are very effective for preventing stormwater from being contaminated and for routing contaminated flows to a proper treatment facility.

3.2.4.1. PERFORMANCE EVALUATION OF STRUCTURAL CONTROL MEASURES

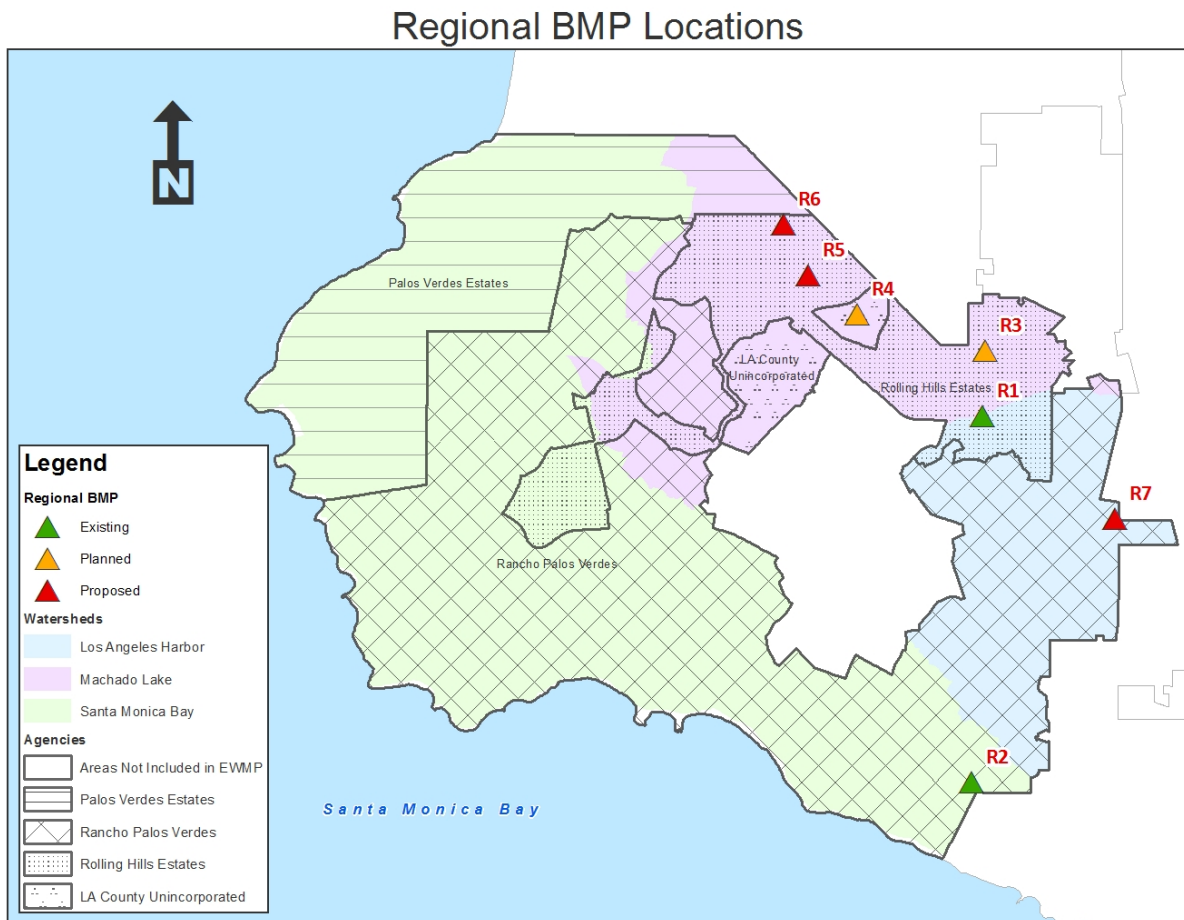
The performance of existing and planned BMPs in the Peninsula EWMP area is evaluated through the RAA as described in section VI.C.5.b.iv(5) of the MS4 Permit, both in terms of volume capture (based on BMP design criteria) and predicted effluent quality. An analysis of BMP Performance data has been summarized in Appendix 4. Refer to Section 4 (Reasonable Assurance Analysis) for more detail on the RAA.

3.2.4.2. REGIONAL BMPs

A summary of existing, planned, and proposed Regional BMPs within the Peninsula EWMP area is summarized below in Figure 3-5 and Table 3-5.

All proposed regional BMPs will either retain or capture and treat water up to the design storm specified for that project, including nonstormwater flows during dry weather.

It is important to note that the EWMP is subject to adaptive management during the implementation phase (see Section 9 of this EWMP). The Participating Agencies may notify the Regional Board that alternative, equivalent actions are proposed in place of the actions described herein. It is important for the Participating Agencies to have flexibility during the implementation phase if proposed Regional BMPs are found to be infeasible or less desirable than alternatives. Regional BMPs will be subject to feasibility studies and/or alternatives analyses. In some cases, the actions proposed herein may be determined to be less preferred compared to other alternatives. If a preferred alternative action is identified and selected, the responsible agency will notify the Regional Board of the newly selected alternative(s) and demonstrate its equivalency.



Date: 3/21/2016

Figure 3-5: Completed, Planned, and Proposed Regional BMPs.

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Table 3-5: Summary of Completed and Planned Regional BMPs

Project Name	Map Reference ID	Jurisdiction	Watershed	Completed, Planned, or Proposed	BMP Type	Design Volume/ Flowrate	85 th Percentile, 24-hr Volume ^(a)	Retains 85 th Percentile, 24-hr Storm?	Design Basis	Drainage Area to BMP	Percent Drainage Area Per Jurisdiction ^{(b)(c)}
Casaba Estates (Butcher Ranch)	R1	RHE	Los Angeles Harbor	Completed	Bioretention	5.1 ac-ft Per Storm	1.8 ac-ft Per Storm	Yes	50-year (5.2 inch)	28.62 Acres	RHE: 100%
San Ramon Canyon	R2	RPV	Santa Monica Bay	Completed	Diversion	Unknown ^(d)	Unknown ^(d)	No	>0.25 inch	Unknown ^(d)	RPV: 100%
Chandler Quarry Project	R3	RHE	Machado Lake	Completed	Infiltration System	200 ac-ft ^(f) Per Storm	43.7 ac-ft Per Storm	Yes	50-year (5.2 inch)	707 Acres	RHE: 100%
South Coast Botanic Garden Regional BMP	R4	UA	Machado Lake	Planned/ Proposed ^(g)	Various ^(g)	20 cfs ^(h)	7.5 ac-ft Per Storm	No	0.1 in/hr	~134 Acres ^(j)	RHE: 24% UA: 76%
Palos Verdes Landfill Regional BMP	R5	RHE	Machado Lake	Proposed ^(k)	TBD	125 cfs ^{(h)(i)}	87.6 ac-ft Per Storm	No	90 th Percentile, Critical Year	~1,415 Acres ^(j)	RPV: 38% RHE: 41% UA: 21%
Valmonte Regional BMP	R6	RHE	Machado Lake	Proposed ^(k)	TBD	30 cfs ^{(h)(i)}	20.3 ac-ft Per Storm	No	90 th Percentile, Critical Year	~400 Acres ^(j)	PVE: 19% RPV: 24% RHE: 57%
Eastview Park Infiltration Project	R7	RPV	Los Angeles Harbor	Proposed ^(k)	Infiltration	124.5 ac-ft ^(l) Per Year	17.7 ac-ft Per Storm	Yes	90 th Percentile, Critical Year	~350 Acres ^(j)	RPV: 100%

Notes:

RPV-Rancho Palos Verdes; PVE-Palos Verdes Estates; RHE-Rolling Hills Estates; UA-LA County, Unincorporated

- (a) Volume determined using a conservative impervious percentage of 70% and the highest 85th Percentile, 24-hr storm depth associated with the location (County of Los Angeles Department of Public Works. *Analysis of 85th Percentile 24-hour Rainfall Depth Analysis Within the County of Los Angeles*. February 2004).
- (b) Percentages are based on the drainage area within the Peninsula EWMP Watershed. Agencies outside of the EWMP boundary were not taken into consideration.
- (c) Percentages are estimated and are subject to change.
- (d) Due to the nature of this project its benefits could not be quantified in the RAA model.
- (e) Chandler Quarry is an existing regional infiltration BMP which is undergoing redevelopment. The redevelopment project is currently under construction and has been conditioned by the City to continue to preserve the hydraulic and water quality function of the existing regional BMP.
- (f) Based on the 50-year design storm.
- (g) The South Coast Botanic Garden has planned BMPs and opportunities for proposed BMPs.
- (h) Due to infiltration infeasibility, these BMPs were designed as flow-through BMPs rather than volume-based BMPs.
- (i) This value represents one of three design alternatives. Refer to Section 3.2.4.2.3 for information on each design alternative.
- (j) Maximum drainage area determined through GIS analysis. This project would also treat drainage area from the City of Rolling Hills.
- (k) Alternative BMPs may be implemented upon further analysis.
- (l) This volume is the total annual capture volume for the 90th percentile, critical year. The design storm used in this analysis was 1-inch, which is greater than the 85th Percentile, 24-hr storm depth of 0.9-inch.

3.2.4.2.1. COMPLETED REGIONAL BMPs

CASABA ESTATES (FORMERLY BUTCHER RANCH)¹⁵

The Casabas Estates regional BMP project was completed in 2013. The project is approximately 8.55 acres located in Rolling Hills Estates. It is bounded on the north by Rolling Hills Country Club and Kramer Tennis Club, on the south by Palos Verdes Drive North, easterly by Monticello Drive, and westerly by Palos Verdes Drive East. The project consists of residential lots, one new Commercial Recreational lot, parking lots, private roads, and private equestrian facilities.

The project involved re-grading a portion of the pre-existing ravine to remove standing water conditions. This inundated area was rehabilitated into a vegetated riparian area designed as a bioretention system to retain and infiltrate runoff from the site. The project receives runoff from offsite (through an existing 24" diameter culvert under Palos Verdes Drive East) and onsite watersheds (a total of 28.62 acres). The new riparian area was designed to retain and infiltrate onsite and offsite runoff in a volume greater than the 85th percentile, 24-hr storm event; therefore, the project was modeled in the RAA as a Regional EWMP Project. See Figure 3-6 for post-development design conditions.

The Casaba Estates project includes multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake and the Greater LA Harbor.
- **Neighborhood Greening and Public Recreation.** This project includes green space within this development which can positively impact the aesthetics, as well as property values, of urbanized areas. Property value tends to increase when an urban neighborhood has green space or trees in sight (CNT, 2010). Green infrastructure and green space can also alleviate urban heat-island effects by reducing temperatures by about 5°F through shade and evaporation (CNT, 2010).
- **Water Conservation/Supply.** The stormwater retained onsite recharges groundwater which is being used for potable or non-potable purposes by the adjacent golf course, thus offsetting reliance on imported water supply.

¹⁵ Bolton Engineering Corp. *Hydrology and Hydraulic Calculations*. September 13, 2010.

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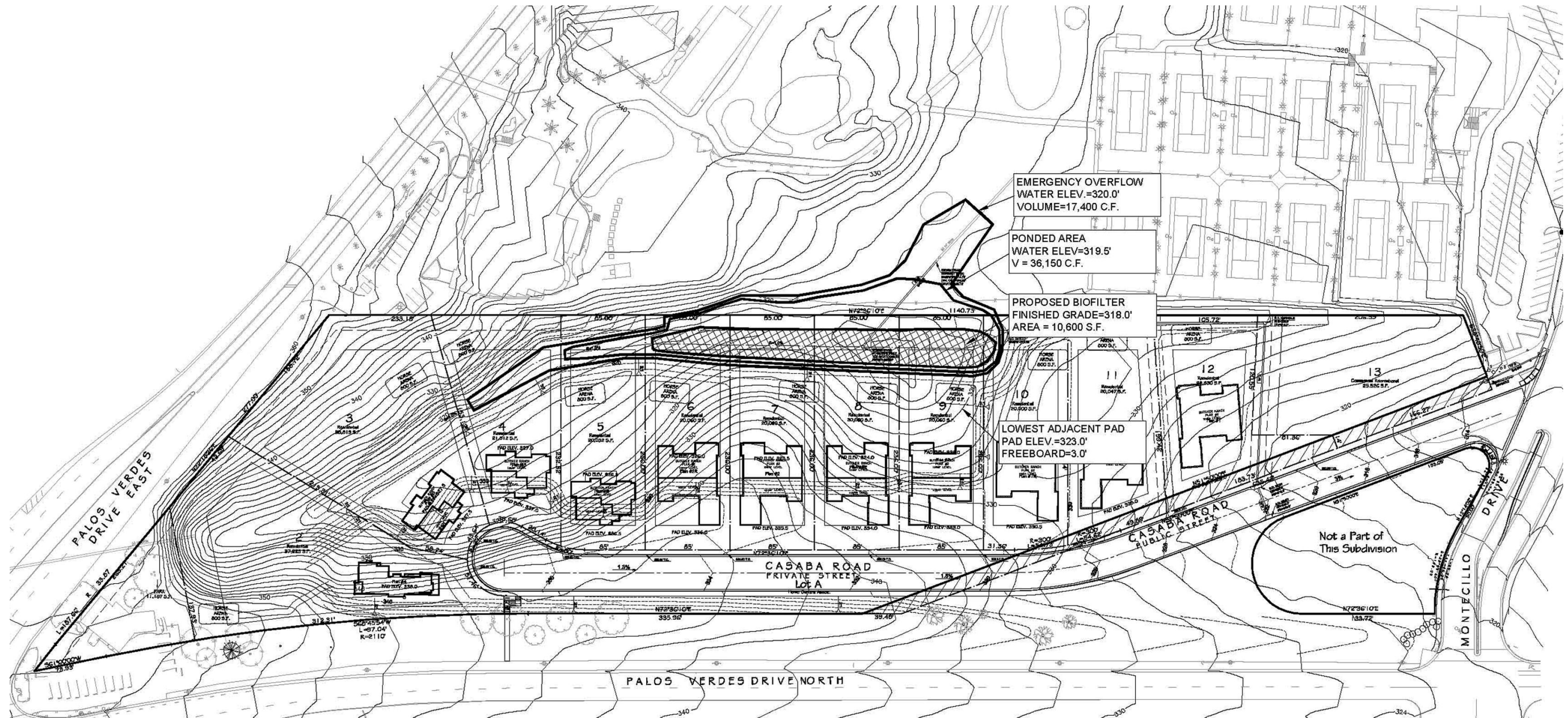


Figure 3-6: Casaba Estates (formerly Butcher Ranch) Post-Development Design Conditions (Bolton Engineering Corp. Hydrology and Hydraulic Calculations. September 13, 2010).

SAN RAMON CANYON

The San Ramon Canyon project is located in the City of Rancho Palos Verdes. The project was completed in October 2014. The project consists of the construction of a mid-canyon inlet structure connected to a 3,900-foot long, 54-inch pipe that outlets below the oceanfront bluff, bypassing a highly erodible section of the canyon (see Figure 3-7). The project inlet is located slightly upstream of the upper switchback along Palos Verdes Drive East and will substantially reduce the amount of flow being delivered to an existing, and overwhelmed, storm drain at Palos Verdes Drive South/25th Street. This project will improve water quality by substantially reducing erosion and minimizing debris and sediment transport to this drain by diverting all stormwater runoff from a greater than ¼ inch rain event to the underground pipe, diverting it from the erosive canyon. Due to the nature of this project its benefits could not be quantified in the RAA model. However, as mentioned above, this project is expected to significantly improve the quality of the downstream receiving water and is expected to address PCBs, DDT, and Sediment Toxicity.

The San Ramon Canyon project will have multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will help to protect recreational beneficial uses, support public health (and wellness) in Santa Monica Bay
- **Habitat.** This project will restore and protect the existing streambed and the surrounding ecosystem to encourage infiltration and biologic uptake.
- **Flood Management.** This project will decrease flood risk by reducing runoff rate and volume.
- **Water Conservation/Supply.** The stormwater retained onsite will recharge the groundwater which is being used for potable or non-potable purposes by the City of Lomita and the golf course, thus offsetting reliance on imported water supply.



Figure 3-7: San Ramon Canyon Project.

CHANDLER QUARRY REDEVELOPMENT PROJECT¹⁶

Redevelopment of the former Chandler Quarry in the City of Rolling Hills Estates was completed in 2018 through private funding to construct a 114-home subdivision and reconfigure the Rolling Hills Country Club golf course and clubhouse. The golf course portion of the project was constructed on the site of the former quarry, with the golf course and subsurface infiltration gallery designed to provide the same hydraulic retention and infiltration capacity as the former quarry, an exception to the Peninsula's typical geological constraints. The new homes that are part of this redevelopment are still under construction, however the stormwater infiltration systems have been fully operational since January 2018 and the golf course is also completed. The project site lies within the Machado Lake sub-watershed of the Dominguez Watershed Management Area (DWMA). The 226-acre project site currently consists of the Chandler Quarry facility, the Rolling Hills Country Club, and surrounding undeveloped land.

The regional project consists of three (3) infiltration galleries along with a pretreatment system for each gallery that consists of a suite of catch basin inserts, drainage swales, barrancas and, for the largest gallery, a biofiltration basin. The subsurface infiltration galleries have been designed as a regional BMP system to capture the 50-year storm runoff event from the 705.2-acre tributary area. This regional project well exceeds the standard for retention of the 85th percentile, 24-hour storm.

See Figure 3-8, Figure 3-9, and Figure 3-10).

The Chandler Quarry project has multiple benefits in addition to the stormwater quality benefits. These additional benefits include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake and the Greater LA Harbor.
- **Neighborhood Greening and Public Recreation.** This project increases green space within this neighborhood which positively impacts the aesthetics, as well as property values, of adjacent areas. Property value tends to increase when an urban neighborhood has green space or trees in sight (CNT, 2010). Green infrastructure and green space can also alleviate urban heat-island effects by reducing temperatures by about 5°F through shade and evaporation (CNT, 2010). Recreation opportunities also can be increased by increased green space and decrease the amount of cars on the road, subsequently decreasing the associated pollutants.
- **Water Conservation/Supply.** The stormwater retained onsite recharges groundwater and is used by the golf course for non-potable purposes, thus offsetting reliance on imported water supply.
- **Public Education/Awareness.** This project incorporates stormwater infrastructure within an area which is highly used by the public creating an awareness of stormwater quality and its importance..

¹⁶ Hunsaker and Associates. *Water Quality Mitigation Plan*. June 16, 2010.

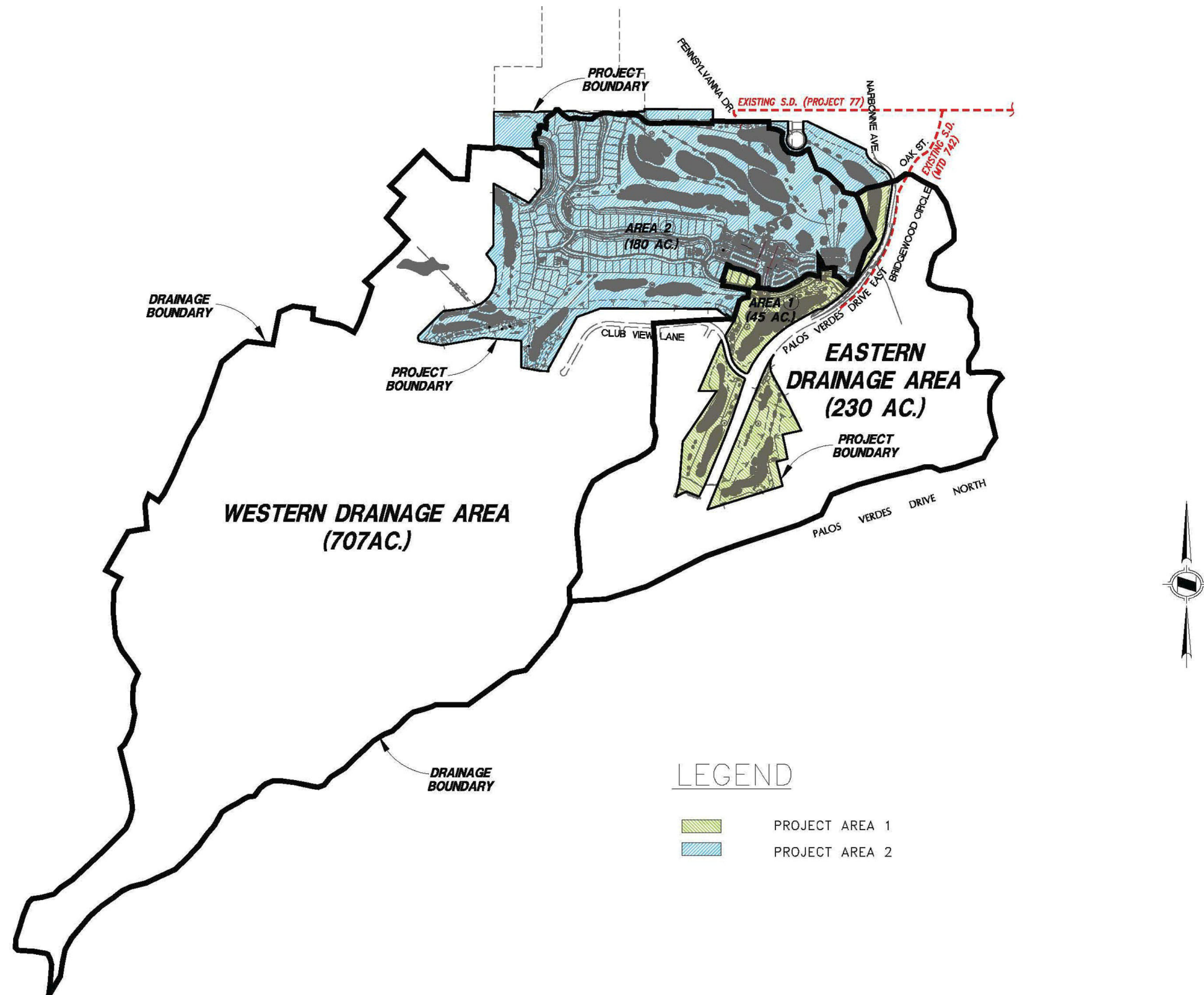


Figure 3-8: Chandler Quarry Project Drainage Area Map
Source: Hunsaker and Associates. Water Quality Mitigation Plan. June 16, 2010.

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Figure 3-9: Chandler Quarry Project Drainage and Water Quality Concept Plan
Source: Hunsaker and Associates. Water Quality Mitigation Plan. June 16, 2010.

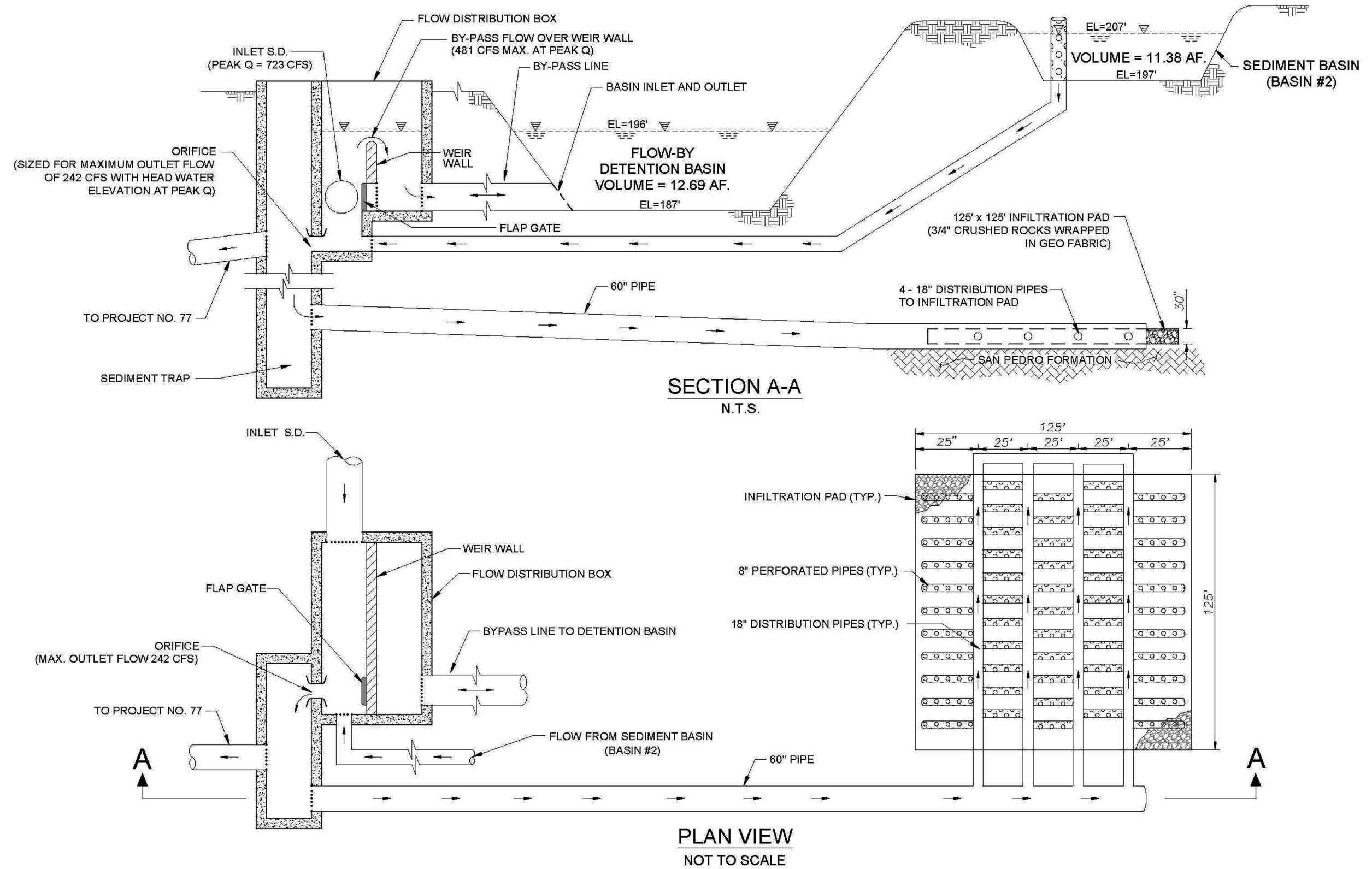


Figure 3-10: Chandler Quarry Project Infiltration System Concept Design
 Source: Hunsaker and Associates. Water Quality Mitigation Plan. June 16, 2010.

3.2.4.2.2. PLANNED REGIONAL BMPS

The Peninsula WMG has planned BMPs which were at levels varying from a concept plan to a final design prior developing the EWMP. The anticipated pollutant removals associated with these BMPs were modeled in the RAA prior to determining additional BMPs necessary for each drainage area. A summary of Planned Regional BMPs within the Peninsula EWMP area is included below.

BOTANIC GARDEN REGIONAL BMP PROJECT

The South Coast Botanic Garden (SCBG) has developed a “Vision Plan” for the SCBG, which works with the SCBG’s current strengths and highlights and provides a framework for future facility projects, programs and other improvements. A key part of the Vision Plan focuses on returning the garden’s stream corridor back to the original form and configuration of the Creek Garden and Lake. As a part of the Vision Plan, many enhancements are being considered for the garden.

The Vision Plan is conceptual and has yet to be finalized. Although lake dredging was estimated to be complete by 2018, the project is still in early planning stages. The County continues to explore funding opportunities, such as applicable grant programs, for the multi-benefit South Coast Botanic Garden Wetland and Lake Revitalization Project. In the meantime, the County continues to collaborate with the Peninsula WMG cities to identify opportunities to implement water quality projects. Many additional opportunities are being considered. For example, as outlined in Figure 3-11, the garden’s existing creek could potentially be developed into an engineered wetland, swale, or stormwater capture facility. The existing lake could provide an opportunity for stormwater capture and possible reuse for irrigation. Additionally, an existing open space area upstream of the lake provides an opportunity for an engineered wetland, swale, or stormwater capture facility. Also, there are three natural canyons upstream of the SCBG (see Figure 3-12). An existing catch basin provides an opportunity to divert these upstream flows to a Regional BMP.

Due to the conceptual nature of the project, it was conservatively modeled as a swale in the RAA. Once the design is finalized, the RAA may be updated as part of the adaptive management process.

The South Coast Botanic Garden Regional BMP could have multiple benefits in addition to stormwater quality. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake.
- **Increased Green Space.** This project will increase the green space at the SCBG which will decrease exposed soil.
- **Water Conservation/Supply.** The stormwater reused onsite could offset reliance on imported water supply.
- **Public Education/Awareness.** This project will incorporate stormwater infrastructure within an area which is highly used by the public creating an awareness of stormwater quality and its importance. These onsite BMPs may serve as public education opportunities in the form of on-site educational materials, such as placards and interpretive signage. The SCBG offers tours available to the public where they will inform the attendees of the existence and importance of the onsite BMPs. During 2014, approximately 114,000 people visited the Botanic Garden, representing the scale of the potential educational impact. Additionally, the Botanic Gardens is open to the public for free the third Tuesday of each month.

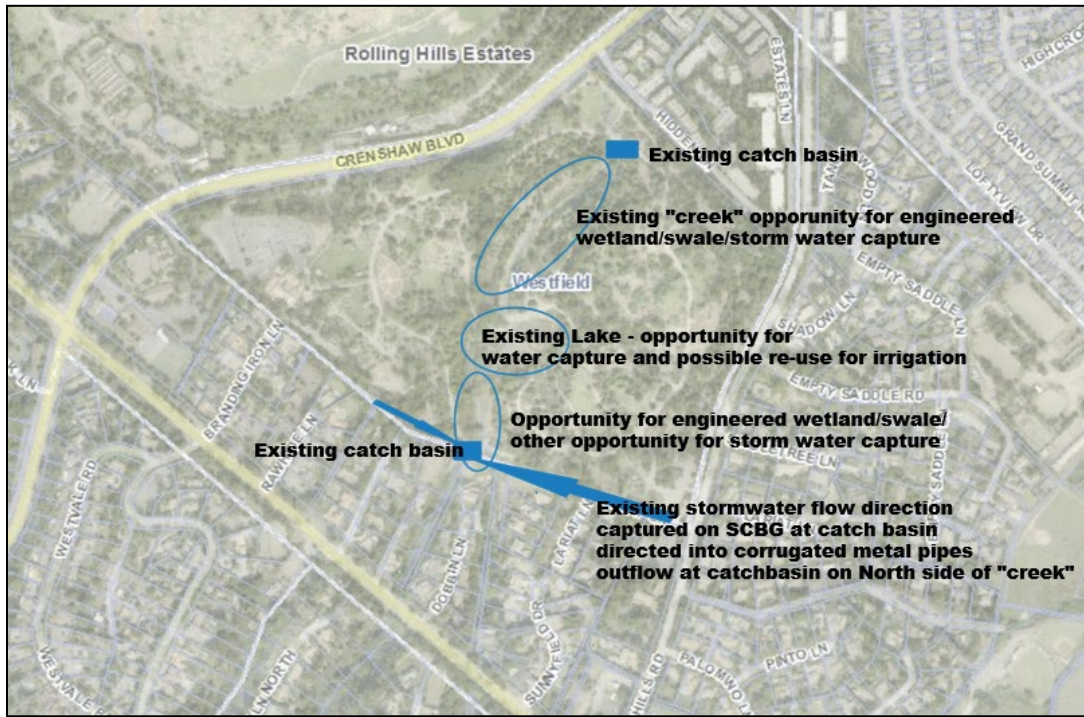


Figure 3-11: South Coast Botanic Garden - Potential Regional BMP Opportunities.

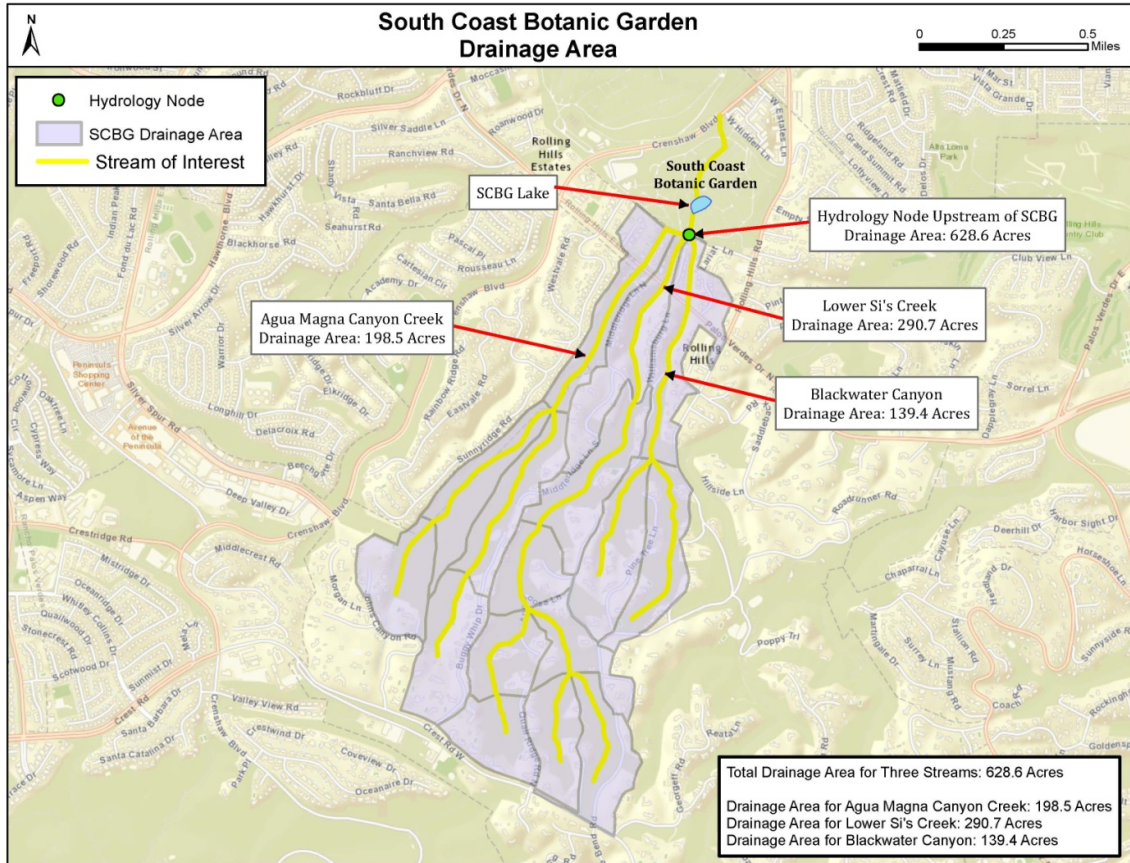


Figure 3-12: Canyons Tributary to Botanic Garden

3.2.4.2.3. PROPOSED REGIONAL BMPs

Proposed regional BMPs were necessary in addition to those already existing and planned in order to achieve the TLRs. Prior to running the RAA model, a desktop GIS analysis was performed to determine potential areas available to locate Regional BMPs. This was done by screening areas within 1,000 feet of a 36" storm drain or open channel waterbody (such as a natural canyon) currently designated as open space (as well as other potentially useful zoning designations). The sites were then grouped by jurisdiction and listed in order by land use. The land use with the highest accessibility is listed first. Within each land use designation, the sites were listed from largest to smallest. The land uses are ranked as follows:

- **OPEN SPACE AND RECREATION:** Sites designated for open space, parks, and recreational activities were ranked with the highest potential for future regional BMPs. This ranking is based on the fact that these types of areas have a high likelihood of being publicly owned eliminating or reducing any high land acquisition costs, they generally have a high percentage of landscaped area available, and they have a greater opportunity for multiple benefits.
- **MUNICIPAL INSTITUTION:** Sites owned by a municipality and designated for government use were ranked with the second highest potential for future Regional BMPs. This ranking is based on the institution being municipally-owned and presenting a higher likelihood of collaboration than a privately-owned facility. Although this may be the case, many Municipal Institutions may not be willing to take on maintenance responsibilities which could result in the necessity of land acquisition or maintenance agreements.
- **GOLF COURSES/COUNTRY CLUBS:** Sites designated as golf courses or country clubs were ranked with the third highest potential for future Regional BMPs. This ranking is based on the fact that these types of areas generally have a high percentage of landscaped area available and have a greater opportunity for multiple benefits. Although this may be the case, land acquisition for these sites is expected to be a difficult and costly process.
- **EDUCATIONAL USE:** Sites designated for educational use were ranked with the fourth highest potential for future Regional BMPs. These sites generally have a high percentage of landscaped area available and have a greater opportunity for multiple benefits; however, gaining cooperation is expected to be difficult.
- **COMMERCIAL USE:** Sites designated as commercial areas were ranked with the fifth highest potential for future regional BMPs. This ranking is based on the fact that these types of areas generally have a high percentage of parking available which could potentially be retrofitted for infiltration opportunities. Although this may be the case, land acquisition for these sites is expected to be a difficult and costly process.

The available sites were then further assessed by the Peninsula WMG to determine locations for Regional BMPs. The site selection process took into account the following characteristics:

- **GIS DATA**
GIS data was further analyzed to screen projects based on criteria such as land use, topography, hydrologic features, streets and roads, existing storm drain infrastructure, and storm drain invert depth.
- **PROJECT BENEFITS**
Projects with potential multiple benefits were prioritized due to the increase in the overall benefit and support for these projects. Benefits to take into consideration included, but were not limited to, the following:
 - Water quality benefits
 - Water supply benefits

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- Recreational use
- Multi-agency benefits
- Publically owned
- Storage availability
- Funding available
- Project readiness
- Flood control benefits
- Proximity to pollutant sources or impaired waters
- Adjacent to existing storm drain

- PROJECT CONSTRAINTS

Potential project constraints were a key component in site selection. It is important to take into consideration any constraints that may result in project infeasibility prior to the design phase. Constraints that were taken into consideration include:

- High groundwater
- Potential for deleterious geotechnical impacts (land movement)
- Low infiltration rates
- Existing soil contamination/proximity to existing soil contamination
- Brownfields¹⁷
- Existing groundwater contamination/proximity to existing groundwater contamination
- Potential for soil instability (liquefaction zones, hillside areas)
- Existing private ownership (requires land acquisition)
- Cost Effectiveness (determined through RAA)
- Historical landmarks

These locations served as a starting point for the RAA, which was the final step to determine where BMPs were needed and the pollutant removal that could be observed through implementation of a BMP. Additional information regarding the initial selection process can be found in the Potential Regional BMP Locations Technical Memorandum (Appendix 5).

As described in Appendix 6, BMPs were identified in a prioritized manner. Prioritization was based on cost (low cost BMPs were prioritized); BMP effectiveness for the pollutants of concern (BMPs that had greater treatment efficiency for the pollutant of concern in a particular analysis region were prioritized over other BMPs); and implementation feasibility as determined by desktop screening. In general, non-structural BMPs were prioritized over structural BMPs due to their lower relative cost, and then structural BMPs were identified that would result in the greatest load reduction per dollar. This was accomplished by targeting land uses with the greatest percent imperviousness and highest pollutant loads and by using BMPs with the greatest performance, particularly for the controlling pollutant. The Proposed BMPs resulting from the selection process are described below.

¹⁷ With certain legal exclusions and additions, the term "brownfield site" means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant (*Environmental Protection Agency*).

MACHADO LAKE WATERSHED BMPs

The Machado Lake Watershed has limited developed areas capable of implementing green street-type BMPs (due to limited areas with storm drains and available right-of-way for such projects), and are effectively prevented from implementing large scale infiltration projects due to the presence of geotechnical hazards, specifically land subsidence, and lack of available space. Additionally, the Machado Lake Watershed is held to very low WQBELs, particularly for phosphorus. Because of the low WQBELs, traditional biofiltration BMPs would not satisfy the reductions necessary to meet the TMDL limits. As a result, the potentially feasible projects that could be implemented in this area are large scale, flow-through treatment projects, such as a treatment facility with storage or a sub-surface flow wetland (SSF wetland).

PALOS VERDES LANDFILL REGIONAL BMP

A potential location for a project of this type is on or adjacent to the closed Palos Verdes Landfill main site, which is approximately 240 acres. This location was selected due to the fact that two large storm drain main lines join immediately upstream of the landfill at Hawthorne Boulevard (see Figure 3-13). Collectively, these storm drains collect runoff from approximately 1,415 acres of land within the RHECH and Wilmington Drain subwatersheds. Due to impaired groundwater and subsurface contamination at this inactive landfill which is under the oversight of DTSC, infiltration BMPs could not be considered, instead more costly treatment BMPs were evaluated. If feasible, treatment at this location could consist of either a storage-and-treatment facility or a Subsurface Flow (SSF) wetland lined with an impervious barrier. The following examples of projects were proposed to demonstrate reasonable assurance of compliance:

- SSF Wetland with a design treatment rate of 15 cfs and an equalization storage volume of 50 million gallons. Assuming a hydraulic residence time of five days and a basin depth of six feet, the total footprint of such a project would be approximately 60 acres.
- Treatment Facility with a treatment rate of 10 cfs (4,500 gpm) and storage of 50 million gallons, which could potentially be used for reuse.
- Treatment Facility with a treatment rate of 125 cfs (56,000 gpm) and storage of two million gallons, which could potentially be used for reuse.

However, further investigation has demonstrated that there is limited space available on earthen ground (i.e. not on fill) to support the 50 MG storage structure proposed for two of the concepts. The Department of Toxic Substances Control (DTSC), who oversees the landfill, also raised significant concerns about the potential for leaks and releases of water into the fill and are unlikely to approve the siting of an SSF wetland on the landfill surface.

The Palos Verdes Landfill project would have multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake and the Greater LA Harbor.
- **Neighborhood Greening and Public Recreation.** This project will increase the green space within this development which can positively impact the aesthetics, as well as property values, of urbanized areas. Property value tends to increase when an urban neighborhood has increased green space (CNT, 2010). Green infrastructure and green space can also alleviate urban heat-island effects by reducing temperatures by about 5°F through shade and evaporation (CNT, 2010). Recreation opportunities also

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can be increased by green space which may decrease the amount of cars on the road, subsequently decreasing the associated pollutants.

- **Public Education/Awareness.** This project will incorporate stormwater infrastructure within an area which can be designed for high public use, creating an awareness of stormwater quality and its importance. This onsite BMP may serve as public education opportunities in the form of on-site educational materials, such as placards and interpretive signage.

Palos Verdes Landfill Regional BMP

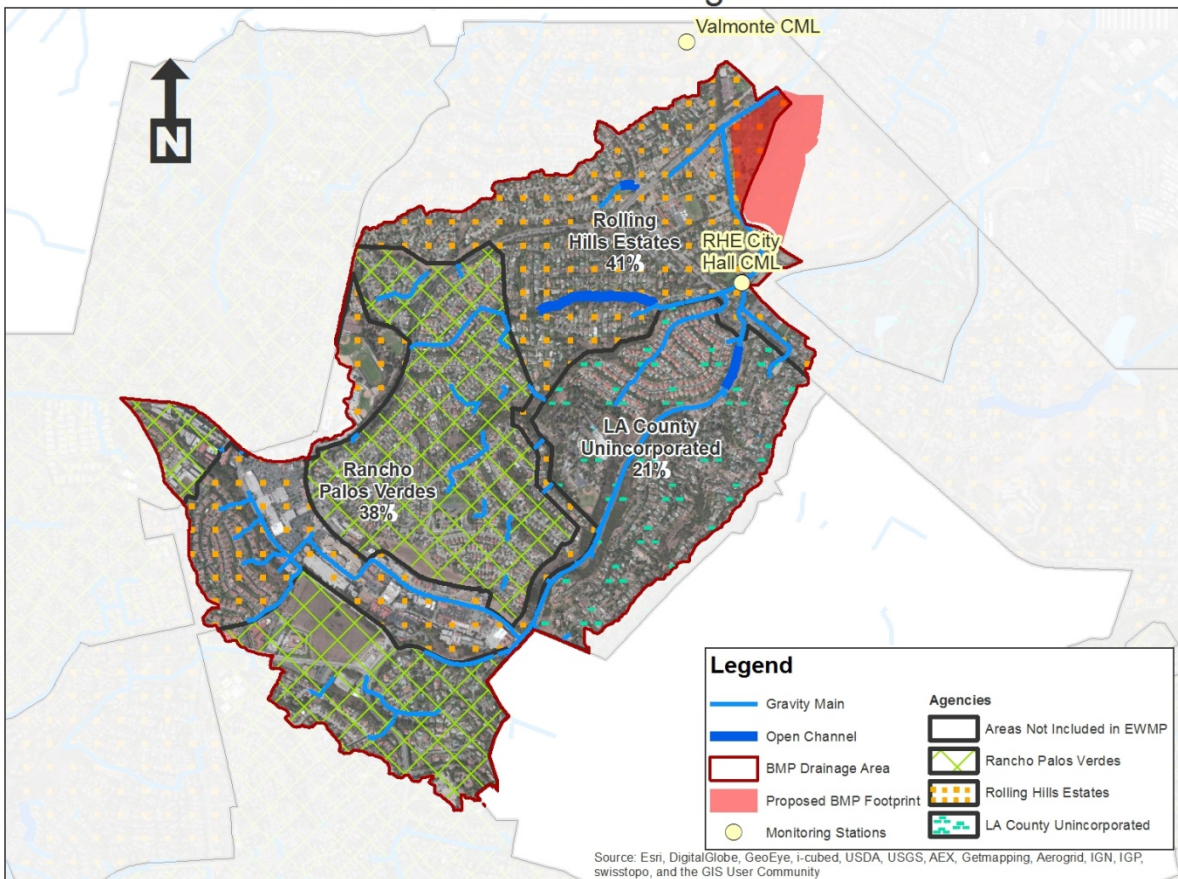


Figure 3-13: Proposed Palos Verdes Landfill Regional BMP Drainage Area.

Valmonte Regional BMP

Treatment consisting of either a storage-and-treatment facility or a SSF wetland is proposed at the downstream end of the analysis region, adjacent to or immediately upstream of the Valmonte compliance monitoring location (see Figure 3-14). Approximately 400 acres are tributary to this area. Although significantly more work is needed for easement or land acquisition and to investigate the feasibility, cost-effectiveness, and design details of such a BMP, the following examples of projects are sufficient to demonstrate reasonable assurance of compliance:

- SSF Wetland with a design treatment rate of 2 cfs and an equalization storage volume of 40 million gallons.
- Treatment Facility with a treatment rate of 10 cfs (4,500 gpm) and storage of 15 million gallons.

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- Treatment Facility with a treatment rate of 30 cfs (13,500 gpm) and storage of 3.5 million gallons.

The Valmonte Regional EWMP Project was evaluated by the Peninsula WMG and found to be infeasible for environmental reasons. It was discovered during the initial evaluation that the proposed storage-and-treatment facility or SSF wetland would be located within the flood plain of a blue-line stream and as such construction would not be permitted. Additionally, the proposed project would involve easements and or land acquisition for multiple privately-owned parcels. The original scope of the project proposed in the EWMP was found to be infeasible, however a smaller, alternative project on an adjacent site in combination with other projects may be considered, e.g., the potential Fern Creek restoration discussed in 3.2.4.2.4.

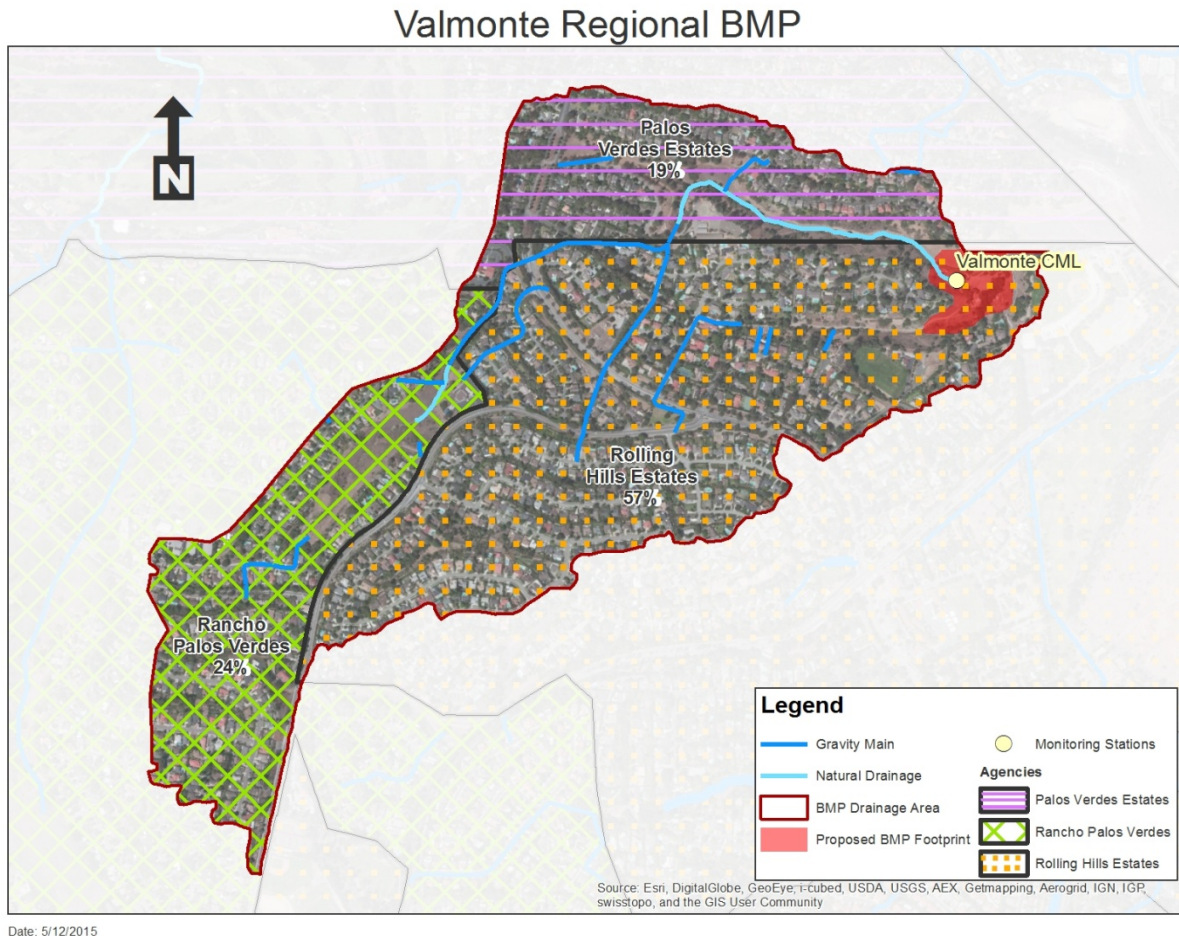


Figure 3-14: Proposed Valmonte Regional BMP Drainage Area.

LOS ANGELES HARBOR WATERSHED BMPs

EASTVIEW PARK INFILTRATION PROJECT

Eastview Park is a large park space near the southeast corner of the intersection of Western Avenue and Westmont Drive in Rancho Palos Verdes (see Figure 3-15). A large storm drain main runs adjacent to the park, draining approximately 350 acres. Unlike most areas of the Peninsula, Eastview Park is located in a flat area with less concern for geotechnical hazards such as land subsidence. Therefore, if feasible, treatment at this location could consist of a subsurface infiltration BMP capable of capturing the 1-inch

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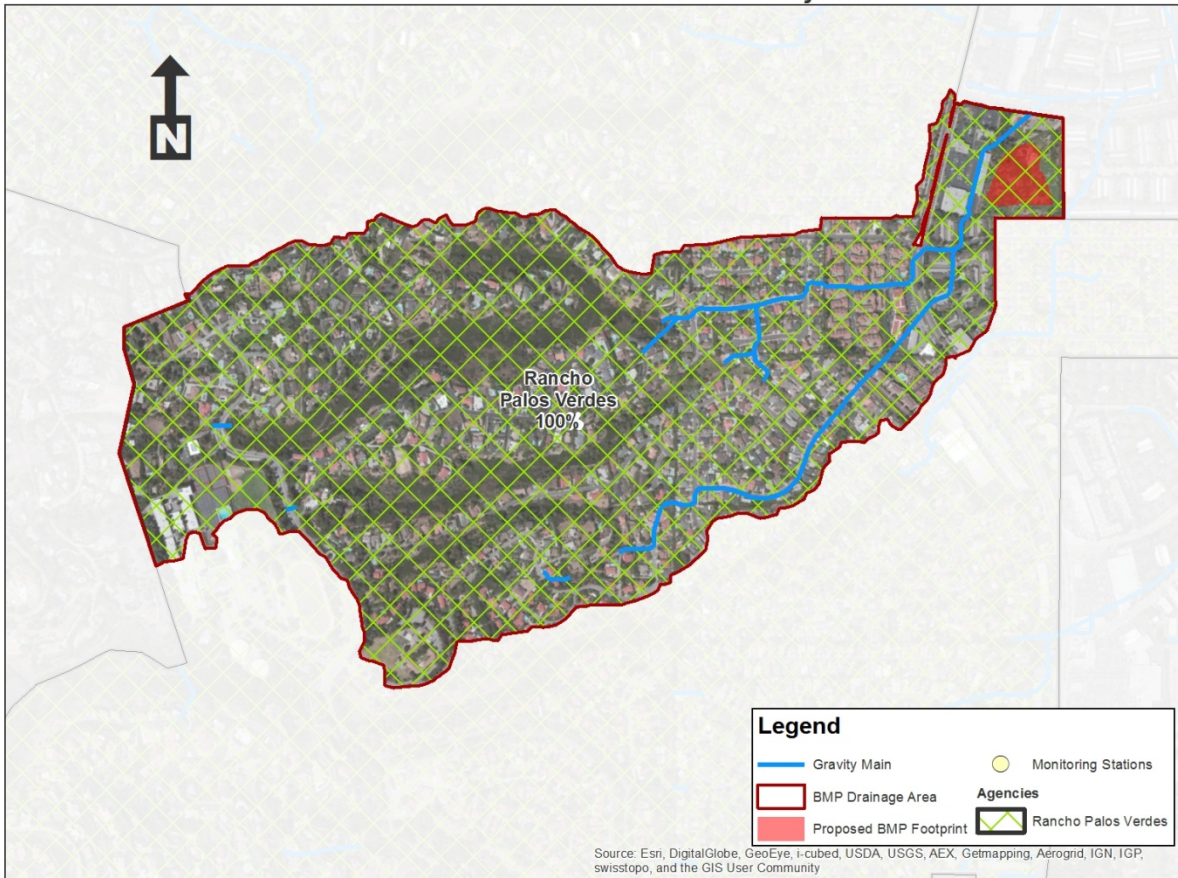
design storm¹⁸ is proposed. Assuming a depth of 6 feet, the project footprint would be approximately 3.5 acres. Multiple benefits include pollutant load reduction and groundwater recharge. Significantly more work is needed to investigate the feasibility, cost-effectiveness, and design details of such a BMP. In the case that infiltration is not a feasible option or unforeseen constraints affect the project, alternative BMPs could be proposed in the Los Angeles Harbor Watershed.

The Eastview Park Infiltration project would have multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) at the Greater LA Harbor.
- **Neighborhood Greening and Public Recreation.** This project will increase the green space within this development which can positively impact the aesthetics, as well as property values, of urbanized areas. Property value tends to increase when an urban neighborhood has green space or trees in sight (CNT, 2010). Green infrastructure and green space can also alleviate urban heat-island effects by reducing temperatures by about 5°F through shade and evaporation (CNT, 2010). Recreation opportunities also can be increased by increased green space which may decrease the amount of cars on the road, subsequently decreasing the associated pollutants.
- **Water Conservation/Supply.** The stormwater retained onsite will recharge the groundwater which could potentially be used for potable or non-potable purposes in the future, thus offsetting reliance on imported water supply.
- **Public Education/Awareness.** This project will incorporate stormwater infrastructure within an area which is highly used by the public creating an awareness of stormwater quality and its importance. The onsite BMP may serve as public education opportunities in the form of on-site educational materials, such as placards and interpretive signage.

¹⁸ The 1.25-inch storm was selected for load reduction purposes and is larger than the 85th percentile storm (approximately 0.85-inch).

Eastview Park Infiltration Project



Date: 4/28/2015

Figure 3-15: Proposed Eastview Park Infiltration Project Drainage Area.

3.2.4.2.4. POTENTIAL REGIONAL BMPs

In addition to the existing, planned, and proposed BMPs, several opportunities will be considered for implementation. In many cases, significantly more work is needed to investigate the feasibility, cost-effectiveness, and design details of these BMPs; however, they will be considered during the implementation phase of the EWMP. As further information is gathered, the Participating Agencies may be inclined to select the below opportunities as alternative or supplemental to the proposed BMPs listed above.

The EWMP is subject to adaptive management during the implementation phase (see Section 9 of this EWMP) and it is important for the Participating Agencies to have flexibility during the implementation phase if proposed Regional BMPs are found to be infeasible or less desirable than alternatives.

POTENTIAL MACHADO LAKE WATERSHED BMPs

WALTERIA DETENTION BASIN

The Walteria Detention Basin was constructed for flood protection in 1962 by the LACFCD. The basin has a perimeter of approximately one mile and extends to an approximate depth of 100 feet and has a total capacity of approximately 1,005 acre-feet. The primary function of the Walteria Detention Basin is to provide flood protection and as such it is operated to detain flows that enter the basin during storm events. During storm conditions the basin receives runoff from a tributary area of approximately 2,287 acres with 7.35% of that area (168 acres) contributed by the Peninsula WMG, with the balance of the area contributed by the City of Torrance. The facility is operated as a detention basin and when a major storm is forecast or following a significant storm event, the level in the basin is pumped down to maintain sufficient flood protection capacity for adjacent communities and to sustain capacity of downstream flood conveyance infrastructure. When such discharge is necessary, the discharge is pumped into a 54-inch diameter storm drain, i.e., through the Project No. 584 storm drain, and comingles with flows from other MS4 agencies before eventually discharging to Wilmington Drain and on to Machado Lake. The Peninsula WMG also understands that approximately every 1-5 years it is also necessary to pump the level in the basin down for periodic maintenance purposes.

The Walteria Detention Basin was identified as a potential location for a regional BMP in the Peninsula EWMP, pending the results of a Special Study Monitoring Program. The City of Torrance and the LACFCD collaborated and completed the two-year Special Study Monitoring program to characterize water quality of the stormwater flowing into and out of the basin. Results of the monitoring effort can be found in the 2017-18 Watershed Annual Report. The Peninsula EWMP identified another potential regional BMP downstream of the Walteria Basin at Torrance Airport, which could divert outflows from the basin to the Airport for infiltration. The Peninsula WMG has contributed funding to a Preliminary Design study of the Torrance Airport Infiltration project and results of this work indicate that diversion of the dry weather discharges from Walteria Basin to the Torrance Airport for Infiltration will not be feasible. Nor is it feasible to use Walteria Basin as an in-situ water quality treatment system (such as through application of aluminum sulfate or other flocculants) since such approaches could diminish the flood protection capacity of the basin. However, the Peninsula WMG is interested in participating in further work to assess how the basin could be leveraged into an opportunity to create a regional project or to meet Machado Lake TMDL WLAs on a mass basis for the tributary area to the basin.

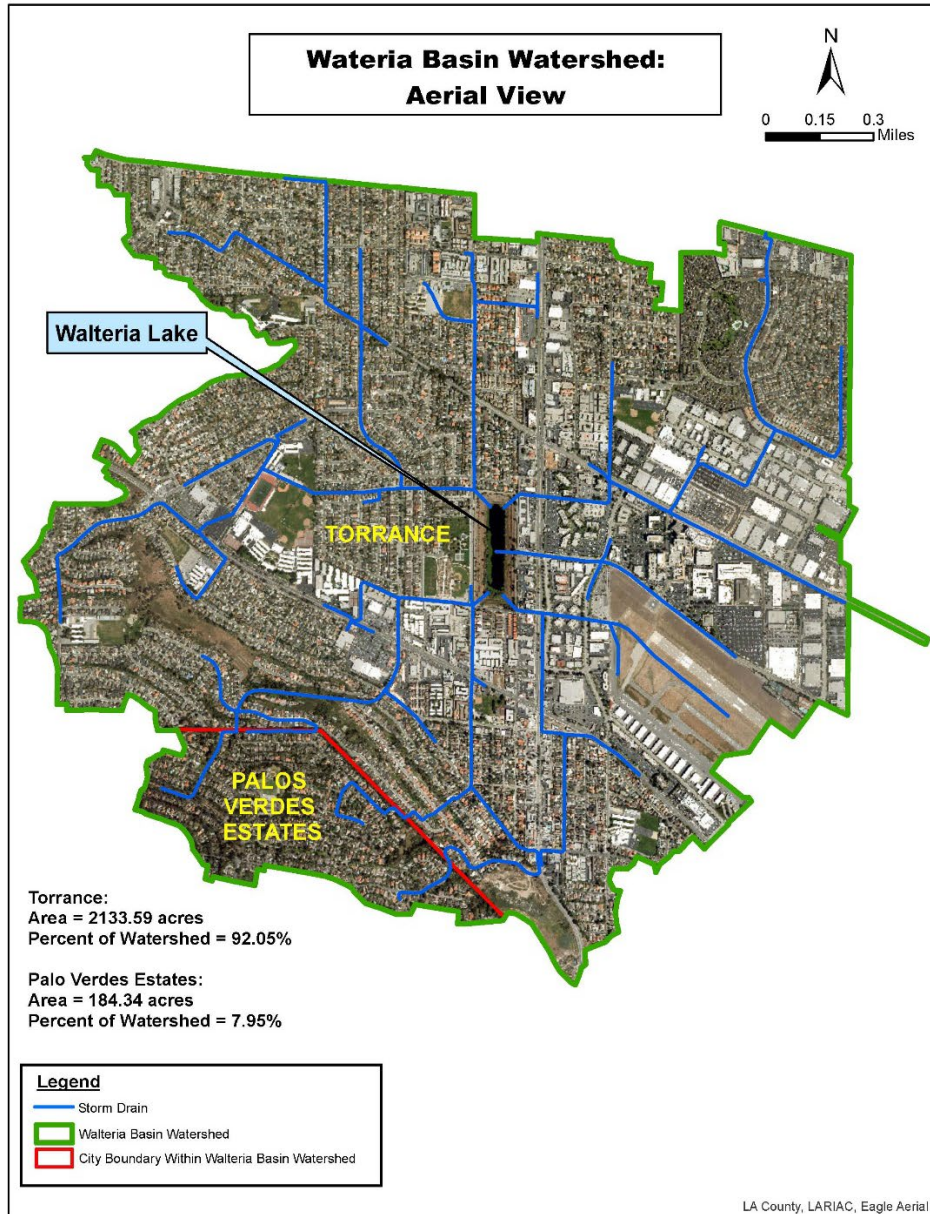


Figure 3-16: Waleria Lake Watershed Aerial View.

TORRANCE AIRPORT BASIN

An alternative BMP that the Peninsula WMG will take into consideration is an infiltration system near the Torrance Airport, located within the Machado Lake Watershed, but outside of the Peninsula WMG watershed (see Figure 3-17). The parties draining to this BMP include the cities of Los Angeles, Torrance, Carson, Lomita, Rolling Hills, Rolling Hills Estates, Rancho Palos Verdes, Redondo Beach, and Palos Verdes Estates, and unincorporated Los Angeles County.

There are three potential sites for treatment; A1, A2, and A3. Stormwater runoff from the Peninsula WMG could be treated at sites A2 and A3 from a diversion structure Div4 (see Figure 3-18). Although this project was not modeled in the RAA, it would be designed for the 85th percentile, 24-hour storm.

The Peninsula WMG is currently moving forward with an investigation to determine the feasibility, cost-effectiveness, and design details for this project and it will be further considered during the implementation phase of the EWMP. If feasible, this BMP could potentially solve the difficult challenges the Peninsula WMG faces with infiltration infeasibility and stringent phosphorus goals.

The Peninsula WMG has jointly contributed \$148,393 to the cost of the Preliminary Design which was 62% of the Prop 1 grant match needed for preliminary design. The preliminary design study was initiated in 2018 and includes a geotechnical investigation, installation of groundwater monitoring wells, and a development of a groundwater model to evaluate any potential impacts on the existing groundwater contaminant plume.

The Torrance Airport Infiltration System would have multiple benefits in addition to the stormwater quality benefits that could be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake and the Greater LA Harbor.
- **Flood Management.** This project will decrease flood risk by reducing runoff rate and volume.
- **Water Conservation/Supply.** The stormwater retained onsite will recharge the groundwater which will be used by the golf course for non-potable purposes, thus offsetting reliance on imported water supply.

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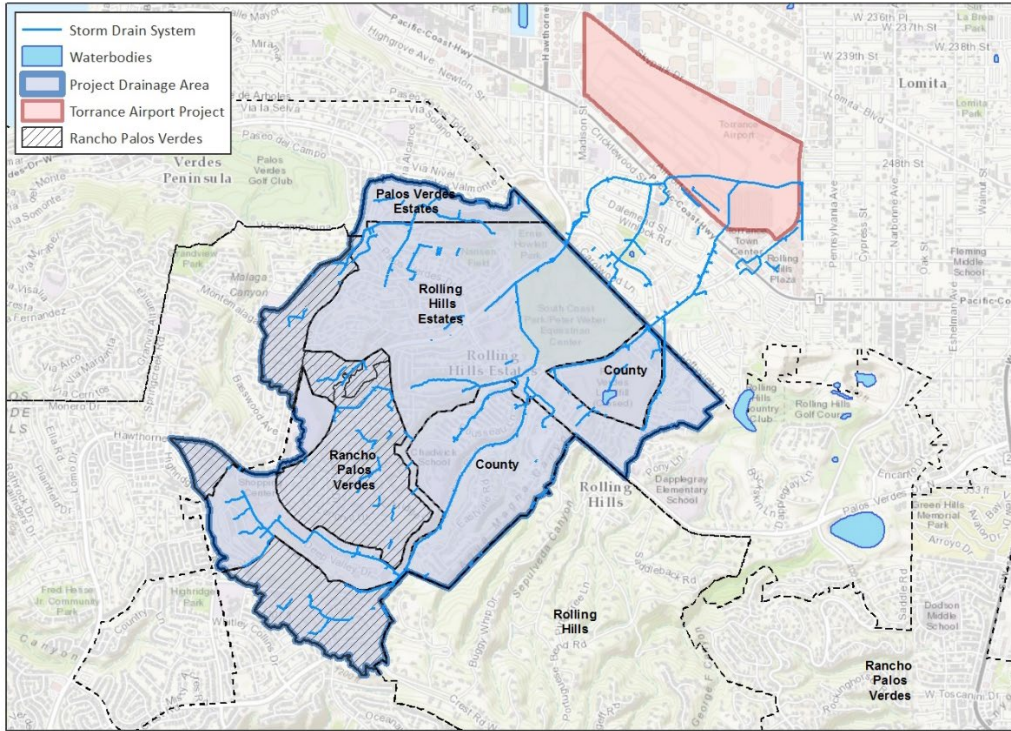


Figure 3-17: Torrance Airport Drainage Area.

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Figure 3-18: Conceptual Layout of Torrance Airport Basin
 Source: *Enhanced Watershed Management Program for the Machado Lake Watershed.*
 City of Torrance. March 2016.

DRY WEATHER AND WET WEATHER LOW FLOW DIVERSION BMP

An alternative BMP that the Peninsula WMG will take into consideration is a low flow diversion system within the Machado Lake Watershed, or in another location within the Peninsula Watershed. Although this BMP was not modeled in the RAA, historical data suggests that a low flow diversion BMP could have significant effects on the stormwater quality of this area. Due to the nature of this project, which would effectively be a dry weather/low flow diversion, its benefits could not be quantified in the RAA model.

A Low Flow Diversion BMP would have multiple benefits in addition to the stormwater quality benefits including, but are not limited to, beneficial use protection. This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake.

The Peninsula WMG has completed an initial investigation into the potential feasibility of two diversion projects. Baseline year-round flow in two major storm drains that are sampled monthly under the

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Machado Lake TMDLs was determined to be caused by rising groundwater (i.e., naturally occurring springs). Diversion of the baseline dry weather flow as well as wet weather low flows from these two storm drains could offer the opportunity for beneficial use of this water while also potentially supporting attainment of the Machado Lake Nutrient TMDL on a mass basis (demonstrated through a special study). The Peninsula WMG investigated two alternative approaches to multi-benefit diversion projects with assistance from the Sanitation Districts of Los Angeles County (LACSD) through its new authority to assist with stormwater projects¹⁹.

The first alternative investigated by the Peninsula WMG was to divert the baseline dry weather and wet weather low flows to the sanitary sewer system with the potential for eventual treatment and beneficial use as recycled water. A desktop study to identify sanitary sewer lines with sufficient capacity to accept these low flows and within reasonable proximity to the two storm drains was undertaken by LACSD staff and funded by the Peninsula WMG. No sanitary sewer lines with sufficient capacity could be located within the Peninsula WMG, however, a sanitary sewer line with sufficient capacity to receive such flow was identified downstream at a location adjacent to the Torrance Airport in the City of Torrance.

The second alternative is to divert baseline dry weather and low-flow wet weather flows from storm drains within the Peninsula EWMP area for beneficial use to replace potable water for irrigation. The three most likely opportunities for significant irrigation demand within close proximity to these storm drains are three large open space/park land uses: the 35-acre Ernie Howlett Park, the 173-acre closed main site of the Palos Verdes Landfill, and the 83-acre South Coast Botanic Garden. During the current reporting year, the LACSD staff worked on behalf of the Peninsula WMG to establish technical conditions satisfactory to the Department of Toxic Substances Control (DTSC) for the development of storage and treatment systems for the project on the PV Landfill main site and for utilization of the water for irrigation at agronomic rates. The next step for this alternative would be to develop design concepts, evaluate potential irrigation demand, and develop a water balance to establish the feasibility and scope of the potential project.

FERN CREEK STREAM RESTORATION

Fern Creek, located within the City of Rolling Hills Estates, has been identified as having areas susceptible to ponding conditions. Restoring the creek would likely result in subsequent nutrient reductions in the downstream areas. Due to the unknown condition of the stream and status of ownership/easements, the project was not included in the RAA model; however, further investigation will be considered as part of this EWMP. The Fern Creek Stream Restoration would have multiple benefits in addition to the stormwater quality benefits including, but are not limited to, beneficial use protection. This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake.

MACHADO LAKE RESTORATION

This project is comprised of three components; Wilmington Drain Multi-use; Machado Lake Ecosystem Rehabilitation; and a Supplemental Water Supply Pipeline. One of the main goals of this project is to improve the water quality conditions to meet the existing and future TMDL requirements of Machado Lake. Currently, the LACFCD and City of Los Angeles collaborated on the Wilmington Drain Multi-use component, while the City of Los Angeles is leading the Machado Lake Ecosystem Rehabilitation and Supplemental Water Supply Pipeline. The Peninsula WMG may consider collaborating where feasible on the Supplemental Water Supply Pipeline and the Machado Lake Ecosystem Rehabilitation Project.

¹⁹ Enabled by legislation enacted on October 9, 2015 through SB485.

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The Supplemental Water Supply Pipeline Component will include installation of a new 16-inch (or smaller) supplemental water pipeline to deliver microfiltration (MF)/reverse osmosis (RO) treated water to Machado Lake for lake replenishment during the dry season. Once completed, the Supplemental Water Supply Pipeline Component will result in a significant increase in the water quality of Machado Lake during dry weather. As a result of this project, the health of the waterbody will be improved significantly and could result in a reconsideration of the WQBELs in the existing TMDL. The City of Los Angeles's Machado Lake Ecosystem Rehabilitation Project was completed during 2017.

The Machado Lake Restoration would have multiple benefits in addition to the stormwater quality benefits including, but are not limited to, beneficial use protection. This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) in Machado Lake.

REOPENER FOR THE MACHADO LAKE NUTRIENT TMDL

As the Participating Agencies work diligently to comply with the Machado Lake Nutrient TMDL, it is becoming apparent that the effluent limitations are very difficult to achieve. A TMDL reopener to allow reevaluation of the TMDL prior to final compliance is an avenue which the Peninsula WMG supports. In the instance that a TMDL reopener results in higher WQBELs, alternative BMPs such as traditional biofiltration may be sufficient to reach compliance. Collection of lake monitoring data is needed for several years in order for Regional Board staff to reconsider the Machado Lake Nutrient TMDL.

POTENTIAL SANTA MONICA BAY WATERSHED BMPs

MALAGA COVE WATER REUSE²⁰

The City of Palos Verdes Estates has implemented dewatering measures to prevent nuisance rising groundwater from damaging homes and businesses in Malaga Cove. The nuisance groundwater removed from these dewatering sites is currently discharged into the local storm drain system and/or to the nearby Pacific Ocean. This project proposes to divert this water to an existing golf course and potentially a school in Palos Verdes Estates for irrigation use. While the source of the rising groundwater is most likely infiltrated stormwater and irrigation water, this project would serve as a dry weather/low flow diversion rather than as stormwater capture or treatment project. Although this potential project has not been included in the load reductions modeled in the RAA, it has the potential to contribute to additional pollutant removal by reducing or eliminating non-stormwater discharges and low flow wet weather flows from the drainage area.

More work is needed to investigate the feasibility, cost-effectiveness, and design details of such a BMP; however, this project will be considered during the implementation phase of the EWMP. The Malaga Cove Water Reuse project would have multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) at Machado Lake and the Santa Monica Bay.
- **Water Conservation/Supply.** Stormwater retained in capture-and-use BMPs can be reused for irrigation and other on-site, non-potable uses, thus promoting water conservation and offsetting reliance on the potable water supply.

ABALONE COVE WATER REUSE²¹

The City of Rancho Palos Verdes has implemented dewatering measures to prevent nuisance groundwater from damaging homes and businesses. In the City of Rancho Palos Verdes, continuous-withdrawal dewatering wells have been installed to slow the progression of the Abalone Cove Landslide and the Portuguese Bend Landslide. The nuisance groundwater removed from these dewatering sites is currently discharged into the local storm drain system and/or to the nearby Pacific Ocean. This potential project proposes to divert this water to existing golf courses in Rancho Palos Verdes for irrigation use. Although this potential project has not been included in the load reductions modeled in the RAA, it has the potential to contribute to additional pollutant removal by reducing or eliminating non-stormwater discharges and low flow wet weather flows from the drainage area.

More work is needed to investigate the feasibility, cost-effectiveness, and design details of such a BMP; however, this project will be considered during the implementation phase of the EWMP. The Abalone Cove Water Reuse project would have multiple benefits in addition to the stormwater quality benefits that will be observed. These additional benefits may include, but are not limited to, the following:

- **Beneficial Use Protection.** This project will result in higher water quality which will help to protect recreational beneficial uses and support public health (and wellness) at Machado Lake and the Santa Monica Bay.
- **Water Conservation/Supply.** Stormwater retained in capture-and-use BMPs can be reused for irrigation and other on-site, non-potable.

²⁰ RMC. "Abalone Cove Project and Malaga Cove Plaza Project Conceptual Evaluation." August 06, 2009.

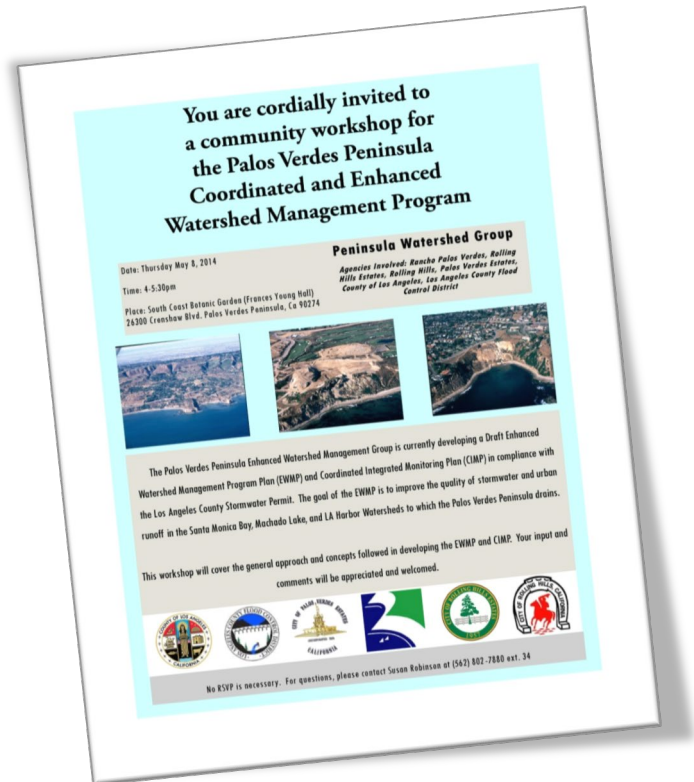
²¹ Information gathered from a feasibility study which is currently being conducted for this project.

3.2.4.2.5. STAKEHOLDER INCORPORATION

STAKEHOLDER MEETINGS

In addition to participating in the various Technical Advisory Committees and Subcommittees, the Peninsula WMG has actively encouraged stakeholder input on the Peninsula EWMP development. Two workshops were held to engage stakeholders in the Peninsula EWMP development process and solicit input. Key stakeholders were identified and invited to participate. These stakeholders include:

- Key City Staff including, but not limited to, the following:
 - Administrators
 - Public Works
 - Stormwater Managers
- City Council Members and Water Quality and Flood Protection Oversight Committee
- Governmental Organizations Staff including, but not limited to, the following:
 - California Water Service Company (CalWater)
 - LA County Parks
 - LA County Sanitation Districts
 - Regional Water Quality Control Board
 - US EPA
 - West Basin Municipal Water District
- Non-Governmental Environmental Organizations Staff including, but not limited to, the following:
 - California Coastal Conservancy
 - Council for Watershed Health
 - Environment Now
 - Heal the Bay
 - Los Angeles Waterkeeper
 - Natural Resources Defense Council (NRDC)
 - Palos Verdes Botanic Garden
 - Palos Verdes Peninsula Land Conservancy (PVPLC)
 - Palos Verdes Peninsula Unified School District
 - Santa Monica Bay Restoration Commission
 - The Nature Conservancy
 - Watershed Conservation Authority
 - Water Replenishment District of Southern California
- Non-Governmental Organizations Staff including, but not limited to, the following:
 - LA County Parks
 - Palos Verdes Golf Course
 - Palos Verdes Peninsula News
 - South Coast Botanic Garden (SCBG)
 - Trump National Golf Club
- Palos Verdes Peninsula Residents



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The first public workshop was held on May 8, 2014. This workshop presented an overview of the EWMP development process and the CIMP. Potential Watershed Control Measures were discussed and attendees were encouraged to provide feedback via email or a comment card that was distributed at the workshop.

Following the first workshop three separate meetings were held with specific stakeholders who expressed interest in providing more detailed input into the Peninsula EWMP. On December 8, 2014 the Peninsula WMG met with the South Coast Botanic Garden (SCBG) staff for a site walk. Different BMP options were discussed, one of which was incorporated into the RAA (see Sections 3.1.1.1.1 and 4). On February 12, 2015 the Peninsula WMG met with staff from the Palos Verdes Peninsula Land Conservancy (PVPLC). Options to incorporate the resources and knowledge available through the PVPLC were presented (see detailed discussion below). On March 31, 2015 the Peninsula WMG met with staff from the Palos Verdes Golf Club. Opportunities to capture and reuse stormwater to irrigate the Golf Course were discussed (see detailed discussion below).

The second public workshop was held on May 6, 2015. This workshop covered the Peninsula EWMP including the proposed BMPs and how Stakeholder input was incorporated. The attendees were encouraged to continue to send feedback and suggestions. Working towards better stormwater quality is a continued effort and collaboration with individuals and organizations with similar goals is essential to achieving that quality.

The following sections describe projects which are being considered as a result of Stakeholder input. These opportunities are being considered for future inclusion. Once a finalized approach has been determined, the BMPs will be modeled as appropriate during adaptive management.

PALOS VERDES PENINSULA LAND CONSERVANCY

During the Peninsula EWMP Stakeholder Meeting held in May 2014, the PVPLC expressed an interest in participating in the Peninsula EWMP. To follow up, the Peninsula WMG invited the PVPLC to attend a focused meeting on February 12th, 2015 regarding opportunities to work together. As a result, a relationship with the PVPLC and the Peninsula WMG has been established.

The Palos Verdes Peninsula Land Conservancy (PVPLC) was founded in 1988 by a group of concerned area residents to preserve open space on the Palos Verdes Peninsula, restore the habitat and allow public access to the preserved lands in perpetuity. The focus of the PVPLC is to create and manage large blocks of natural open space.

There are many opportunities to work with the PVPLC to incorporate drought-tolerant, native plants within the watershed. Projects were not specifically identified to be included in the EWMP at this time; however, the PVPLC has projects currently committed to within the watershed and their relationship with the Peninsula WMG could be beneficial in incorporating their expertise into future plans. Benefits for incorporating drought-tolerant, native plants include reduced non-stormwater flow, reduced nutrients, and reduced sediment discharge. The sediment discharge reduction would be observed through incorporating drought-tolerant, native plants in areas which currently have exposed sediment. Since sediment is a large contributor to pollutant transport, erosion reduction could be highly beneficial.

In addition to providing drought tolerant landscape alternatives, the PVPLC is also interested in accepting stormwater as an alternative irrigation supply.

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Figure 3-19: Bluff Cove

Figure 3-20 shows areas which the PVPLC has designated for protection. In addition to these areas, the PVPLC has purchased a portion of Malaga Canyon in Rancho Palos Verdes and are in the process of obtaining final contracts and easements to begin restoration. The PVPLC is committed to restoring 5 acres per year of land, which they generally exceed. A potential project that the PVPLC is currently involved within includes the deconstruction of homes within the Bluff Cove area due to geotechnical concerns (see Figure 3-19). This area would be restored to natural conditions following deconstruction.



Figure 3-20: Palos Verdes Peninsula Land Conservancy Open Space Preserves

PALOS VERDES GOLF COURSE REGIONAL BMP PROJECT

The Palos Verdes Golf Course is city-owned and operated by a concessionaire, and located within Palos Verdes Estates. The facility is dual-plumbed to allow for a secondary source of water for irrigation purposes. The golf course is in the process of weighing options for their secondary source of water.

Since stormwater capture is not a consistent supply, the best available source that could potentially benefit the Peninsula WMG and meet the requirements of the golf course is the baseline flow within the RDD 275 subdrainage area. RDD 275 is monitoring location identified in the Peninsula CIMP and is in the RHE subwatershed. The RDD 275 subdrainage area is comprised of 860 acres, excluding Ranchview and Chadwick Canyons, and consists primarily of hardened conveyances. The subdrainage area includes the

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Rolling Hills Estates downtown commercial area; residential areas in Rancho Palos Verdes, Rolling Hills, and County unincorporated; equestrian properties; a private K-12 academy; and arterial roadways (Silver Spur Road and Crenshaw Boulevard). Baseline dry weather flow has been observed where the RDD 275 subdrainage area daylights in a trapezoidal ditch along Crenshaw Boulevard (see Figure 3-21), and estimates of flow rate have been made from within the manhole at RHE City Hall which is a current monitoring location.

The Palos Verdes Golf Course has requested and analyzed samples of water within the RDD 275 subdrainage area and determined that with treatment and/or blending the water quality is satisfactory as a secondary source for irrigation. The Palos Verdes Golf Course, the Peninsula WMG will move forward with gathering accurate flow data to determine if the flow available will meet the irrigation demands of the Palos Verdes Golf Course.

Although this potential project has not been included in the load reductions modeled in the RAA, it has the potential to contribute to additional pollutant removal by reducing or eliminating non-stormwater discharges and low flow wet weather flows from the drainage area.



Figure 3-21: RDD 275 – Looking South/Upstream along Crenshaw Boulevard.

CALWATER PROJECT

CalWater reached out to the Peninsula WMG following a stakeholder meeting held in May 2014. They expressed an interest in working with the Peninsula WMG in the implementation of a regional BMP. Although finalized projects have not been determined, the Peninsula WMG has established an important relationship with CalWater for future collaboration on projects to reach a common goal.

4. REASONABLE ASSURANCE ANALYSIS

4.1. EXECUTIVE SUMMARY

The MS4 Permit requires that a Reasonable Assurance Analysis (RAA) be conducted for the waterbody-pollutant combinations addressed by this EWMP. The RAA involves the identification and evaluation of potential BMP implementation scenarios with respect to the MS4 Permit-specified effluent and receiving water limits for the priority pollutants of concern for the Peninsula WMG. The RAA demonstrates achievement of these effluent and receiving water limits for each waterbody-pollutant combination addressed in this EWMP. The RAA presented herewith conforms to Part VI.C.5.b.iv (5) of the MS4 Permit, which states:

Permittees shall conduct a Reasonable Assurance Analysis for each waterbody-pollutant combination addressed by the [EWMP]. [The] RAA shall be quantitative and performed using a peer-reviewed model in the public domain. Models to be considered for the RAA, without exclusion, are the Watershed Management Modeling System (WMMS), Hydrologic Simulation Program-FORTRAN (HSPF), and the Structural BMP Prioritization and Analysis Tool (SBPAT)... The objective of the RAA shall be to demonstrate the ability of [the EWMP] to ensure that Permittees' MS4 discharges achieve applicable water quality based effluent limitations and do not cause or contribute to exceedances of receiving water limitations.

In early 2014, the Regional Board also developed a guidance document titled, "Guidelines for Conducting Reasonable Assurance Analysis in a Watershed Management Program, Including an Enhanced Watershed Management Program." Although the guidance document presents guidelines and not necessarily strict requirements, the RAA presented herewith has been developed to conform to the Regional Board guidance document where appropriate.

The RAA approach leverages the strengths of the publicly available, MS4 Permit-approved, GIS-based SBPAT model program that has been developed for the region¹. The following describes the rationale for utilization of this model for the RAA. A non-modeling based methodology was applied for the dry weather RAA (refer to Attachment 4.A for a detailed description).

SBPAT is a public domain, "open source," GIS-based water quality analysis tool intended to: 1) facilitate the identification, prioritization, and selection of BMP project opportunities and technologies in urbanized watersheds; and 2) quantify benefits, costs, variability, and potential compliance risk associated with stormwater quality projects. The decision to use SBPAT for the Peninsula WMG RAA in the manner described below was partially based on the model capabilities and the unique characteristics of the Peninsula WMG, specifically:

1. **Modeling of SMB hydrologic and watershed processes** – SBPAT utilizes EPA's Stormwater Management Model (SWMM) as the hydrologic engine, and SBPAT has been calibrated to local rainfall and SMB streamflow gauges, confirming the ability to predict stormwater runoff volumes on an annual basis;

¹ SBPAT is specifically referenced in the MS4 Permit Part VI.C.5.b.iv and was presented at the first two Permit Group TAC RAA Subcommittee meetings.

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2. **SMB pollutants of concern and their compliance metric expression** – SBPAT has been utilized for planning applications related to Bacteria TMDL compliance (and specifically exceedance-day predictions, based on SMB criteria), including a demonstrated linkage of watershed bacteria loading to beach exceedance days;
3. **Availability of new open space water quality loading data** – Recently developed Event Mean Concentration (EMC) data are consistent with, and easily incorporated into, SBPAT and were developed in SMB as part of this RAA-development effort;
4. **Capability to conduct opportunity and constraints investigations** – SBPAT is capable of supporting structural BMP placement, prioritization, and cost-benefit quantification, and has been applied for such purposes previously in other SMB watersheds;
5. **Characterization of water quality variability** – SBPAT is capable of quantifying model output variability and confidence levels, which is a component of the Regional Board’s recent RAA guidance; and
6. **Supports quantification of interim milestones, consistent with methods addressing both structural and non-structural BMPs** – SBPAT can model interim design scenarios by adjusting BMP input parameters to represent steps in BMP phasing. SBPAT can also model some non-structural wet weather BMPs, such as LID incentives and LID ordinance implementation for redevelopment projects.

4.2. REASONABLE ASSURANCE ANALYSIS

The Reasonable Assurance Analysis for the Peninsula WMG is included in Appendix 6.

5. COMPLIANCE SCHEDULE

This Chapter provides the compliance schedule for the Peninsula WMG. The compliance schedule will be used to measure progress toward addressing the highest WQPs and achieving interim and final WQBELs and RWLs.

5.1. INTRODUCTION

Sections VI.C.2 and VI.C.3 of the MS4 Permit describe how compliance with receiving water limits (RWLs) is to be attained for various water body-pollutant combinations (WBPC) identified during the EWMP development process. Specifically, the following categories of WBPCs are to be addressed by the EWMP:

- WBPCs Addressed through a TMDL (Category 1 pollutants)
- 303(d)-listed WBPCs (Category 2 Pollutants)
 - Pollutants in the same class as those identified in a TMDL and for which the waterbody is 303(d)-listed (Section VI.C.2.a.i)
 - Pollutants not in the same class as those identified in a TMDL, but for which the waterbody is 303(d)-listed (Section VI.C.2.a.ii).
- Non 303(d)-listed WBPCs (Category 3 pollutants)
 - Pollutants for which there are exceedances of RWLs, but for which the waterbody is not 303(d)-listed (Section VI.C.2.a.iii).

Table 5-1 displays the WBPCs identified in the EWMP and summarizes which category of WBPC they fall into. These identified WBPCs are the Water Quality Priorities for the Peninsula WMG. Requirements for achieving RWLs for each category are described in the following sections.

REQUIREMENTS FOR WATERBODY-POLLUTANT COMBINATIONS ADDRESSED BY A TMDL (CATEGORY 1 POLLUTANTS) AND 303(d) LISTED POLLUTANTS IN THE SAME CLASS AS THOSE ADDRESSED BY A TMDL

For WBPCs addressed by a TMDL, adherence to all requirements and compliance dates set forth in the approved EWMP will constitute compliance with applicable interim TMDL-based water quality based effluent limits and interim receiving water limits outlined in Permit Part VI.E and Attachments L-R. Most of the WBPCs addressed through a TMDL have corresponding interim and/or final compliance milestones that fall within the term of the Permit. However, there are a few WBPCs being addressed by a TMDL for which interim compliance milestones need to be developed within the term of the Permit. Table 5-2 summarizes the applicable TMDL compliance dates and those that have been developed for the EWMP.

During the adaptive management process, if a WBPC within the Peninsula WMG is added to the State's 303(d) list that falls within the same class as those being addressed by a TMDL, the WBPC will be added to the list of Water Quality Priorities and the following actions will be completed per Permit Section VI.C.2.a.i:

- It will be demonstrated that Watershed Control Measures (WCMs) selected to achieve the applicable TMDL provisions will also adequately address MS4 contributions of the pollutant(s) within the same class. Assumptions and requirements of the corresponding TMDL provisions must be applied to the additional pollutant(s), including interim and final requirements and deadlines for their achievement, such that the MS4 discharges of the pollutant(s) will not cause or contribute to exceedances of receiving water limitations.

- The WBPC will be included in the Reasonable Assurance Analysis (RAA)
- Milestones and dates for their achievement will be developed consistent with those in the applicable TMDL.

REQUIREMENTS FOR 303(D) LISTED WATER BODY POLLUTANT COMBINATIONS (CATEGORY 2 POLLUTANTS) NOT IN THE SAME CLASS AS THOSE ADDRESSED BY A TMDL

Currently, coliform bacteria in the Wilmington Drain Subwatershed is the only 303(d)-listed pollutant within the Peninsula WMG that is not being addressed by a TMDL¹. This WBPC is not in the same class as any existing TMDL within the Dominguez Channel Watershed Management Area portion of the Peninsula EWMP Area. Although a definitive linkage between coliform bacteria in Wilmington Drain and MS4 discharges from the Peninsula WMG has not been demonstrated, the MS4 system may cause or contribute to this impairment. Therefore, the following actions have been completed as part of the EWMP to address coliform bacteria in Wilmington Drain:

- This WBPC was included in the RAA.
- WCMs were selected to address contributions of indicator bacteria from MS4 discharges coming from the Peninsula WMG, such that these MS4 discharges will not cause or contribute to the exceedance of the receiving water limits coliform bacteria.
- Milestones and dates for BMP implementation have been identified to control MS4 discharges such that they do not cause or contribute to exceedances of receiving water limitations within a timeframe that is as short as practicable, taking into account the technological, operational, and economic factors that affect the design, development, and implementation of the WCMs that are necessary.
- Milestones relate to a specific water quality endpoint (e.g., percent load reduction) and dates relate either to taking a specific action or meeting a numeric water quality endpoint.
- If the identified dates are beyond the term of the Permit, the following will apply per Permit Section VI.C.2.a.ii(5):
 - In drainage areas where retention of all nonstormwater runoff and all stormwater runoff from the 85th percentile, 24-hour storm event will be achieved, efforts will continue to target implementation of WCMs identified in the EWMP, including WCMs to eliminate nonstormwater discharges that are a source of pollutants to receiving waters.
 - For areas where retention of the volume described above is technically infeasible and where the Regional Board determines that MS4 discharges cause or contribute to the water quality impairment, development of a stakeholder-proposed TMDL may be initiated upon approval of the EWMP. For MS4 discharges from these drainage areas to the receiving waters, any extension of this compliance mechanism beyond the term of the Permit will be consistent with the implementation schedule in a TMDL for the WBPC(s) adopted by the Regional Board.

¹ A 303 (d) listing for copper and lead also exists for the Wilmington Drain, however, a September 2010 modification of the consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC) included a finding of non-impairment for copper and lead in Wilmington Drain. No water quality data are currently available for the Wilmington Drain; however, the Regional Water Resources Control Board has indicated that the impairments for copper and lead will be removed from the 303(d) list when sufficient data is available to de-list in accordance with the State Listing Policy. Therefore, these WBPCs will not be addressed through this EWMP.

REQUIREMENTS FOR NON 303(D)-LISTED WATER BODY-POLLUTANT COMBINATIONS (CATEGORY 3 POLLUTANTS)

Permit Section C.2.a.iii discusses the requirements for pollutants for which there are exceedances of RWLs, but for which the waterbody is not 303(d)-listed. At this time, there have not been any Category 3 pollutants identified within the Peninsula WMG. As part of the adaptive management process, should any WBPCs be identified as a Category 3 pollutant during implementation of the CIMP and the MS4 is identified as a source of the pollutant(s), the following actions will be taken to modify the EWMP:

- WCMs will be identified to address contributions of the pollutant(s) from MS4 discharges to the receiving water(s), such that the MS4 discharges of the pollutant(s) will not cause or contribute to the exceedance of the RWLs.
- The RAA will be revised for the identified WBPCs.
- Enforceable milestones and dates for their achievement will be identified to control MS4 discharges such that they do not cause or contribute to exceedances of receiving water limitations within a timeframe as short as possible, taking into account the technological, operation, and economic factors that affect design, development, and implementation of the control measures that are necessary.
 - The time between dates will not exceed one year
 - Milestones will relate to a specific water quality endpoint and dates will relate either to taking a specific action or meeting a milestone
- If the identified dates are beyond the term of the Permit, the following will apply per Permit Section VI.C.2.a.ii(5):
 - In drainage areas where retention of all nonstormwater runoff and all stormwater runoff from the 85th percentile, 24-hour storm event will be achieved, efforts will continue to target implementation of WCMs identified in the EWMP, including WCMs to eliminate nonstormwater discharges that are a source of pollutants to receiving waters.
 - For areas where retention of the volume described above is technically infeasible and where the Regional Board determines that MS4 discharges cause or contribute to the water quality impairment, development of a stakeholder-proposed TMDL may be initiated upon approval of the EWMP. For MS4 discharges from these drainage areas to the receiving waters, any extension of this compliance mechanism beyond the term of the Permit will be consistent with the implementation schedule in a TMDL for the WBPC(s) adopted by the Regional Board.

5.2. SCHEDULES

According to Permit Section VI.C.5.c, TMDL compliance schedules must be incorporated into the EWMP to demonstrate that WCMs selected during EWMP development will adequately address these WBPCs in a timely manner so that MS4 discharges of the pollutants will not cause or contribute to exceedances of RWLs.

Permit Section VI.C.5.c states that the EWMP must incorporate TMDL schedules outlined in Permit Attachments L through R and, where necessary, develop interim milestones and dates for their achievement during the Permit term². These schedules must be used to measure progress towards addressing the highest water quality priorities and achieving applicable water quality-based effluent limitations (WQBELS) and/or RWLs.

These schedules must meet the following criteria:

- Schedules must be adequate for measuring progress on a watershed scale once every two years.
- Schedules must be developed for all WCMs that will be implemented individually and on a watershed scale.

Schedules must also incorporate the following:

- Applicable interim and/or final TMDL compliance deadlines occurring within the Permit term identified in Permit Part VI.E and Attachments L through R
- Interim milestones and dates for their achievement within the Permit term must be developed for any applicable TMDL(s) where deadlines within the Permit term are not otherwise specified
- Interim milestones and dates for their achievement within the Permit term must be developed for Water Quality Priorities not addressed through a TMDL (Category 2 and 3 WBPCs) based on the following criteria:
 - Milestones must be based on measureable criteria or indicators, to be achieved in the receiving waters and/or MS4 discharges,
 - A schedule with dates for achieving the milestones must be developed, and
 - A final date for achieving the receiving water limitations as soon as possible must be determined.

The Peninsula WMG has identified Category 1 and 2 WBPCs as summarized in Table 5-1 below. As the table shows, all the Water Quality Priorities for the Peninsula WMG are being addressed through a TMDL, with the exception of coliform bacteria in Wilmington Drain. This WBPC is listed on the State's 303(d) list and does not fall within the same class as any TMDL pollutant within its watershed as described above.

Table 5-2 and Table 5-3 below outline the compliance milestones and corresponding water quality objectives to be achieved by the Peninsula EWMP. ***Bold-italic*** font indicates where a milestone or interim and/or final water quality objective was developed for the EWMP to meet the requirements described above. In many cases, there is no baseline established due to lack of monitoring data. In these instances, a baseline load was determined during RAA modeling and the compliance milestone is connected to a percentage reduction from this to be determined (TBD) baseline load.

² The MS4 Permit term is assumed to be December 28, 2012 thru December 28, 2017.

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Table 5-1: WBPCs Identified in the Peninsula WMG.

Category	Class	Pollutant	Waterbody	WBPC Type ^(a)	
Category 1	Trash	Trash/Marine Debris	Santa Monica Bay and Machado Lake	TMDL	
	Bacteria	Coliform and Enterococcus	Santa Monica Bay	TMDL	
	Historic Organics		PCBs	Santa Monica Bay, Machado Lake and Los Angeles Harbor	TMDL
			DDT	Santa Monica Bay, Machado Lake and Los Angeles Harbor	TMDL
			Chlordane	Machado Lake and Los Angeles Harbor	TMDL
			Dieldrin	Machado Lake	TMDL
			Total Nitrogen	Machado Lake	TMDL
	Nutrients		Total Phosphorus	Machado Lake	TMDL
			Ammonia	Machado Lake	TMDL
			Chlorophyll a ^(b)	Machado Lake	TMDL
			Dissolved Oxygen ^(b)	Machado Lake	TMDL
			Odor ^(b)	Machado Lake	TMDL
			Eutrophic Conditions ^(b)	Machado Lake	TMDL
			Algae ^(b)	Machado Lake	TMDL
			Copper	Los Angeles Harbor	TMDL
	Metals		Lead	Los Angeles Harbor	TMDL
			Mercury	Los Angeles Harbor	TMDL
			Zinc	Los Angeles Harbor	TMDL
			PAHs	Los Angeles Harbor	TMDL
	PAHs		Benzo(a)pyrene	Los Angeles Harbor	TMDL
		Chrysene	Los Angeles Harbor	TMDL	
		Benzo[a]anthracene	Los Angeles Harbor	TMDL	
		Dibenz[a,h]anthracene	Los Angeles Harbor	TMDL	
		Phenanthrene	Los Angeles Harbor	TMDL	
		Pyrene	Los Angeles Harbor	TMDL	
Category 2		Metals	Copper and Lead ³	Machado Lake (Wilmington Drain)	303(d)
	Bacteria	Coliform Bacteria	Machado Lake (Wilmington Drain)	303(d)	

^(a) TMDL - WBPC addressed through a TMDL; 303(d) - WBPC listed on the State's 303(d) List

^(b) These “constituents” are not pollutants, but rather describe water quality conditions associated with excessive nutrients; therefore they have been categorized in the same class as other nutrients.

³ A September 2010 modification of the consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC) included a finding of non-impairment for copper and lead in Wilmington Drain. The Regional Water Resources Control Board has indicated that the impairments for copper and lead will be removed from the 303(d) list when sufficient data is available to de-list in accordance with the State Listing Policy.

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Table 5-2: TMDL and 303(d) WBPC Interim (I), Final (F), and Action (A) Compliance Milestones.

TMDL/ 303(d)	Segments	Constituents	Compliance Goal	Weather Condition	Dates and Milestones										
					2012	2013	2014	2015	2016	2017*	2018	2019	2020	2032	2040
Santa Monica Bay Beaches Bacteria	Abalone Cove	Total Coliform Fecal Coliform Enterococcus	Compliance with Total Allowable Exceedance Days	Winter Dry	12/28 F	-	-	-	-	-	-	-	-	-	-
	Bluff Cove			Summer Dry	12/28 F	-	-	-	-	-	-	-	-	-	-
	Inspiration Point Long Point Malaga Cove Portuguese Bend			Wet	12/28 F	-	-	-	-	-	-	-	-	-	-
Santa Monica Bay Nearshore and Offshore Debris	All	Trash Plastic Pellets	% Reduction in Trash from Baseline	Wet and Dry	-	-	-	-	3/20 20%	3/20 40%	8/20 A ⁴	8/20 A ⁵	3/20 100%	-	-
Santa Monica Bay DDT & PCBs	Abalone Cove Bluff Cove	DDT PCBs	Meet WLAs	Wet and Dry	-	-	-	-	-	12/28 A	-	-	-	-	-
Machado Lake Trash	All	Trash	% Reduction in Trash from Baseline	Wet and Dry	3/6 20%	3/6 40%	3/6 60%	3/6 80%	3/6 100%	-	-	-	-	-	-
Machado Lake Pesticides and PCBs	All	Chlordane Dieldrin PCBs DDT	Meet WQBELs	Wet and Dry	-	-	-	-	-	12/28 A	-	9/30 F	-	-	-
Machado Lake Nutrient	All	Algae Total Nitrogen Total Phosphorus Ammonia Chlorophyll a Dissolved Oxygen Odor	Meet WLA	Wet and Dry	-	-	3/11 I	-	-	-	9/11 F	-	-	-	-

⁴ Execution of an MOU among project partners for implementation and cost-sharing of the Prop 84 Santa Monica Bay Restoration/Clean Beaches Santa Monica Bay Catch Basin Insert Project by August 20, 2018

⁵ Complete 50% of full capture system installations by August 20, 2019

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TMDL/ 303(d)	Segments	Constituents	Compliance Goal	Weather Condition	Dates and Milestones												
					2012	2013	2014	2015	2016	2017*	2018	2019	2020	2032	2040		
Long Beach and Greater LA Harbor Toxics	Inner Harbor Fish Harbor Outer Harbor Cabrillo Marina	DDT PCBs Copper Lead Zinc Mercury PAHs Chlordane	Meet WLA	Wet and Dry	12/28 I	-	-	-	-	-	12/28 A <i>(Mercury & Chlordane)</i>	-	-	-	-	3/23 F	-
303(d)	Wilmington Drain	Coliform Bacteria	Determine allowable exceedance days	Wet and Dry	-	-	-	1/30 & 6/28 A	7/1 A	1/30 A	12/28 A	12/28 A	-	-	-	-	6/28 F

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Table 5-3: Interim and Final Water Quality Objectives.

Waterbody	Pollutant	Interim/Action Milestone	Water Quality Objective (Final)	Source
Cabrillo Marina	PCBs	0.199 mg/kg	0.000025 g/yr	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL
	DDT	0.186 mg/kg	0.000028 g/yr	
	Total Copper	367.6 mg/kg	0.0196 kg/yr	
	Lead	72.6 mg/kg	0.289 kg/yr	
	Zinc	281.8 mg/kg	0.74 kg/yr	
	Total PAHs	36.12 mg/kg	0.00016 kg/yr	
Fish Harbor	PCBs	36.6 mg/kg	0.0019 g/yr	
	DDT	40.5 mg/kg	0.0003 g/yr	
	Total Copper	558.6 mg/kg	0.00017 kg/yr	
	Lead	116.5 mg/kg	0.54 kg/yr	
	Zinc	430.5 mg/kg	1.62 kg/yr	
	Total PAHs	2102.7 mg/kg	0.007 kg/yr	
	Chlordane	<i>Assess monitoring data collected through CIMP to determine WCMs to address potential contributions of chlordane from the Peninsula WMG and develop implementation schedule⁶</i>	0.5 ug/kg	
Mercury	Annual Load: 0.15 mg/kg			
Inner Harbor	PCBs	2.107 mg/kg	0.059 g/yr	
	DDT	0.341mg/kg;	0.051 g/yr	
	Total Copper	154.1 mg/kg	1.7 kg/yr	
	Lead	145.5mg/kg	34 kg/yr	
	Zinc	362.0 mg/kg	115.9 kg/yr	
	Total PAHs	90.30 mg/kg	0.88 kg/yr	

⁶ The Peninsula WMG will practice good science techniques by utilizing accurate monitoring data obtained through implementation of the Peninsula CIMP to determine the best approach for reaching final water quality objectives.

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Table 5-3 (Cont.): Interim and Final Water Quality Objectives.

Waterbody	Pollutant	Interim/Action Milestone	Water Quality Objective (Final)	Source
Machado Lake	Trash	Percentage Reduction from Baseline (See Schedule)	Zero Trash	Machado Lake Trash TMDL
	PCBs	Assess monitoring data collected through CIMP to determine WCMs to address potential contributions of chlordane from the Peninsula WMG and develop implementation schedule⁷	Three year average: 59.8 ug/kg	Machado Lake Pesticides and PCBs TMDL
	DDT		Three year average: DDT (all congeners) 4.16 ug/kg; DDE (all congeners) 3.16 ug/kg; DDD (all congeners) 4.88 ug/kg; Total DDT 5.28 ug/kg	
	Chlordane		Three year average: 3.24 ug/kg	
	Dieldrin		Three year average: 1.9 ug/kg	
	Total Nitrogen		2.45 mg/L	
	Total Phosphorus	1.25 mg/L	Monthly Average: 0.1 mg/L	Machado Lake Nutrient TMDL
	Ammonia	Addressed through same schedule as Nutrient TMDL	5.95 mg/L - 1 hr average; 2.15 mg/L - 30 day average	
	Chlorophyll a		20 ug/L - monthly average	
	Dissolved Oxygen		>5 mg/L	
	Odor		N/A	
	Eutrophic Conditions		N/A	
Outer Harbor	PCBs	0.310 mg/kg	0.02 g/yr	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics TMDL
	DDT	0.097 mg/kg	0.005 g/yr	
	Total Copper	104.1 mg/kg	0.91 kg/yr	
	Lead	46.7 mg/kg	26.1 kg/yr	
	Zinc	150 mg/kg	81.5 kg/yr	
	Total PAHs	4.022 mg/kg	0.105 kg/yr	

⁷ The Peninsula WMG will practice good science techniques by utilizing accurate monitoring data obtained through implementation of the Peninsula CIMP to determine the best approach for reaching final water quality objectives.

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Table 5-3 (Cont.): Interim and Final Water Quality Objectives.

Waterbody	Pollutant	Interim/Action Milestone			Water Quality Objective (Final)			Source
Santa Monica Bay	Bacteria	SM (SMB 7-1)	Winter Dry:	1	SM (SMB 7-1)	Winter Dry:	1	Santa Monica Bay Bacteria Dry and Wet Weather TMDLs
			Summer Dry:	0		Summer Dry:	0	
			Wet:	2		Wet:	2	
		SB (SMB 7-2)	Winter Dry:	1	SB (SMB 7-2)	Winter Dry:	1	
			Summer Dry:	0		Summer Dry:	0	
			Wet:	0		Wet:	0	
		S1 (SMB 7-3)	Winter Dry:	1	S1 (SMB 7-3)	Winter Dry:	1	
			Summer Dry:	0		Summer Dry:	0	
			Wet:	1		Wet:	1	
		S2 (SMB 7-4)	Winter Dry:	0	S2 (SMB 7-4)	Winter Dry:	0	
			Summer Dry:	0		Summer Dry:	0	
			Wet:	1		Wet:	1	
	S3 (SMB 7-5)	Winter Dry:	1	S3 (SMB 7-5)	Winter Dry:	1		
		Summer Dry:	0		Summer Dry:	0		
		Wet:	1		Wet:	1		
Marine Debris	Percentage Reduction from Baseline (See Schedule)			Zero Trash Zero Plastic Pellets			Santa Monica Bay Marine Debris TMDL	
PCBs	Assess monitoring data collected through CIMP to determine WCMs to address potential contributions of chlordane from the Peninsula WMG and develop implementation schedule⁸			Three year average: 140.25 g/yr total MS4 loading from SMB			Santa Monica Bay DDT and PCBs TMDL	
DDT				Three year average: 27.08 g/yr total MS4 loading from SMB			Santa Monica Bay DDT and PCBs TDML	

⁸ The Peninsula WMG will practice good science techniques by utilizing accurate monitoring data obtained through implementation of the Peninsula CIMP to determine the best approach for reaching final water quality objectives.

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Table 5-3 (Cont.): Interim and Final Water Quality Objectives.

Waterbody	Pollutant	Interim/Action Milestone	Water Quality Objective (Final)	Source
Wilmington Drain	Bacteria	<ul style="list-style-type: none"> • 6/28/2015: Determine WCMs to address potential contributions of coliform bacteria from the Peninsula WMG and develop implementation schedule. • 7/01/2016: Assess 1st year of monitoring data collected through CIMP to verify existing load assumptions and assess the contribution of coliform bacteria from the Peninsula WMG. • 1/30/ 2017: Begin implementation of additional WCMs (if needed). • 12/28/2018: Assess effectiveness of WCMs in Annual Report. 	<p>6/28/2040: Achieve compliance with wet-weather and dry-weather WLA.</p>	<p>Target Load (allowable exceedance days) was developed using the Arroyo Sequit subwatershed as a reference system during RAA modeling by performing the following steps:</p> <ol style="list-style-type: none"> (1) Calculate the subwatershed’s baseline (natural condition) loading, assuming the land use distribution of the Arroyo Sequit subwatershed (approximately 95% open space) to represent an “allowable” annual load that reflects the reference condition; (2) Calculate “existing” (pre-EWMP implementation) loading using existing land uses and BMPs to represent the current load; and (3) Subtract the two load estimates to determine the target load reduction needed to achieve reference watershed conditions.

5.2.1. NONSTRUCTURAL BEST MANAGEMENT PRACTICES SCHEDULE

A 7.5% load reduction is assumed to result from the cumulative effect of nonstructural BMPs. These nonstructural BMPs consist of Minimum Control Measures (MCMs), Nonstormwater Discharge (NSWD) Measures and Nonstructural Targeted Control Measures (TCMs) as described in Chapter 3. Their implementation over the MS4 Permit term is as follows:

NONSTRUCTURAL MINIMUM CONTROL MEASURES SCHEDULE

The MCMs will be implemented by the Participating Agencies upon approval of the EWMP by the Regional Board Executive Officer or by the implementation dates provided in the MS4 Permit, where applicable. The scope of the MCM programs has expanded significantly from the prior third term MS4 Permit. This change is not entirely unexpected as a period of over ten years separates the adoption of the third and fourth term permits. Consequently significant pollutant reductions are anticipated through effective implementation of the new nonstructural MCMs.

New MCM provisions are described in this EWMP, Section 3.1. Guidance documents have been prepared as an optional aid in MCM development/implementation, some of which can be found in Appendix 2.

NONSTRUCTURAL NON STORMWATER DISCHARGE MEASURES SCHEDULE

The NSWD measures will be implemented by the Participating Agencies upon approval of the EWMP by the Regional Board Executive Officer or by the implementation dates provided in the MS4 Permit, where applicable. The scope of the NSWD measures has expanded from the prior third term MS4 Permit. In particular, NSWD source investigations are now tied into a systematic outfall screening program required by the MS4 Permit Monitoring and Reporting Program and additional conditions have been placed on common exempt NSWDs, such as potable water discharges and irrigation runoff. Consequently significant pollutant reductions are anticipated through the resulting reductions in NSWD flows.

NSWD measures new to the Participating Agencies are described in EWMP Section 3.2.

NONSTRUCTURAL TARGETED CONTROL MEASURES SCHEDULE

Descriptions of each nonstructural TCM and the specific Participating Agencies implementing each TCM is included in Section 3.3. The table also lists whether the TCM is a *planned* or a *potential* control measure. Potential control measures are contingent upon unknown factors such as governing body approval and as such implementation within the MS4 Permit term cannot be guaranteed. Many TCMs are ongoing and will be achieved through continued efforts. Planning efforts for nonstructural TCMs which are not already in effect will begin once the EWMP is approved.

5.2.2. STRUCTURAL BEST MANAGEMENT PRACTICE SCHEDULE

STRUCTURAL MINIMUM CONTROL MEASURE SCHEDULE

Significant pollutant reductions are anticipated through each Participating Agency's effective implementation of the new structural LID BMP requirements of the Planning and Land Development Program. These new MCM provisions are described in EWMP Section 3.1. Guidance documents have been prepared as an optional aid in MCM development/implementation, some of which can be found in Appendix 2.

The Planning and Land Development Program will be implemented by the Participating Agencies no later than June 28, 2014.

STRUCTURAL TARGETED CONTROL MEASURE SCHEDULE

The RAA (Chapter 4) demonstrates the cumulative effectiveness of BMPs to be implemented, supports BMP selection, and provides target load reduction (TLR) goals optimized across the entire watershed.

The plan depicted in the RAA is considered a potential initial scenario. Through the adaptive management process, the Participating Agencies may select different types and/or locations of BMPs. The implementation schedule for the Structural TCMs necessary for compliance can be found in Table 5-4.

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Table 5-4: Structural TCM Implementation Schedule

Project Name ^(a)	Jurisdiction	% Drainage Area Per Jurisdiction ^{(b)(c)}	Parties Responsible for Implementation	Watershed	Completed, Planned, or Proposed	Schedule ^(d)					Targeted Compliance Milestone ^(e)
						Site Investigation and Preliminary Engineering	Environmental Review	Council Review	Design	Construction	
Casaba Estates	RHE	RHE: 100%	RHE	Los Angeles Harbor	Completed	Completed February 2013					Various
San Ramon Canyon	RPV	RPV: 100%	RPV	Santa Monica Bay	Completed	Completed November 2014					Santa Monica Bay DDT and PCBs
Chandler Quarry	RHE	RHE: 100%	RHE	Machado Lake	Completed January 2019	Currently in Construction Anticipated to be Complete by 2018					Machado Lake Nutrient TMDL Final Compliance Date Sept 11, 2018
South Coast Botanic Garden Regional BMP	UA	RHE: 24% UA: 76%	UA	Machado Lake	Planned/Proposed	Proposition 1 Grant Application Submitted Fall 2015.					
Palos Verdes Landfill Regional BMP	RHE	RPV: 38% RHE: 41% UA: 21%	RPV, RHE, UA ^(e)	Machado Lake	Proposed	TBD: See Section 3.2.4.2.3 for details.					
Valmonte Regional BMP	RHE	PVE: 19% RPV: 24% RHE: 57%	PVE, RPV, RHE ^(e)	Machado Lake	Proposed	TBD: See Section 3.2.4.2.3 for details					
Eastview Park Infiltration Project	RPV	RPV: 100%	RPV ^(e)	Los Angeles Harbor	Proposed	2027	2028	2028	2026 – 2028	March 2032	

Notes:

RPV-Rancho Palos Verdes; PVE-Palos Verdes Estates; RHE-Rolling Hills Estates; UA-LA County, Unincorporated

- (a) Only projects for which the TLRs are dependent on the schedules were included in this table.
- (b) Percentages are based on the drainage area within the Peninsula EWMP Watershed. Agencies outside of the EWMP boundary were not taken into consideration. Percentages are estimated and are subject to change.
- (c) Schedules are preliminary and are subject to change depending on investigation results and other outside factors.

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- (d) Reductions are anticipated for various pollutants; however, the Targeted Compliance Milestone represents the water quality objective for which the project will be designed to achieve. This does not necessarily imply that the BMP will address the pollutant identified more effectively than other pollutants present.
- (e) The parties responsible for implementation are preliminary and contingent upon the results of further analysis.

6. EWMP IMPLEMENTATION COSTS AND FINANCIAL STRATEGY

The purpose of this section is to present the financial strategy to represent the strategic options available to the permittees for financing the program costs associated with EWMP. This section provides an order-of-magnitude estimate of the financial resources and an outline for the financial strategy associated with those costs that may be required to attain the goals of the EWMP. The financial strategy is defined as the options available to the WMG to finance the EWMP implementation, including a prioritization of these options.

6.1. EWMP IMPLEMENTATION COSTS

Planning-level estimates of costs associated with implementation of the proposed structural BMPs within the Peninsula WMG area are provided herein based on results from the RAA (Section 4). This section includes an evaluation of the overall economic impacts the proposed projects and programs may have on the community. The estimated costs will be refined as EWMP implementation progresses with the use of actual BMP implementation costs. Costs associated with implementation of non-structural programs are not provided herein.

Cost opinions are presented as an aid for decision makers, and contain considerable uncertainties. Given the iterative and adaptive nature of the EWMP and the many variables associated with the projects, the budget forecasts are order-of magnitude estimates, and are subject to change based on BMP effectiveness assessments, results of outfall and receiving water monitoring, and additional studies such as site specific objectives which could modify water quality objectives for a specific water body-pollutant combination.

6.1.1. METHODOLOGY

Costs estimated for structural BMPs include capital as well as “soft” costs, which include considerations such as contingency and permitting. Capital costs were determined using a line item unit cost approach, which separately accounts for each material cost element required for the installation of a given BMP. Quantities for each line item were calculated based on BMP storage/treatment volumes and typical design configurations. Unit costs were taken from RS Means,¹ past projects based in Southern California, and vendors. Land acquisition costs were not considered as part of this analysis.

Soft costs are project costs that cannot be calculated on a unit cost basis. For conceptual cost estimating, these costs are generally calculated as a percentage of total capital costs.

¹ RS Means is a unit cost database that is updated annually (<http://meanscostworks.com/>). When costs from literature are not available project’s design criteria and unit costs from the database were used to estimate the project’s cost.

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The soft costs considered for each BMP were:

- **Contingency** – Costs intended to compensate for any estimating inaccuracy based on assumptions or measured values, unanticipated market conditions, scheduling delays and acceleration issues, lack of bidding competition, and subcontractor defaults.
- **Construction Management** – The costs associated with management and oversight of the construction of the BMP, from project initiation until completion of the contract.
- **Mobilization and Demobilization** – The costs associated with activation/deactivation of equipment and manpower resources for transfer to/from a construction site until completion of the contract.
- **Permitting** – Cost, including permit fees and personnel hours, of obtaining required permits for BMP installation. Examples of permits needed may include erosion and sediment control, stormwater, construction, and public space permits.
- **Engineering and Planning** – Costs associated with BMP and site design, as well as access for maintenance, environmental mitigation, buried objects, safety/security, traffic control, limited space, and site restoration.

The expected costs for each of these soft costs as percent of total project capital costs are presented in Table 6-1. These percentages were based on literature, best professional judgment, and data from past projects.

Table 6-1: Range of Soft Costs for Regional Projects.

Cost Item	Low Cost Assumption (% of Capital Cost)	High Cost Assumption (% of Capital Cost)
Contingency	10%	20%
Construction Management	8%	15%
Mobilization and Demobilization	3%	5%
Permitting	3%	5%
Engineering and Planning	10%	20%

6.1.2. CONCEPTUAL DESIGN ASSUMPTIONS

As stated in Section 4, a variety of regional BMP design options are available to achieve compliance. For the purposes of cost estimating, a single conceptual design was assumed for each proposed regional BMP.² The cost analysis performed maximizes the effectiveness of funds by analyzing the most cost-effective design for each analysis region. Table 6-2 summarizes the significant design assumptions for each of these BMPs.

Table 6-2: Regional BMP Design Assumptions for Estimating Costs

Analysis Region	BMP Description	Design Storm	Tributary Area (acres)
Greater LA Harbor	Sub-surface infiltration basin (concrete, pre-cast chambers) at Eastview Park. Assumed storage depth of 6 ft, designed to capture a volume of 20.8 acre-ft	1.25 in	345
RHECH + Wilmington	Sub-surface flow wetland with 50 million gallons (MG), or 150 acre-feet, equalization storage volume. The wetland is assumed to have a depth of 6 ft, 4 ft of which contains media. The storage tank is assumed to have a depth of 6 ft. The treatment flow rate is assumed to be 15.2 cfs.	0.02 in/hr	1,414
Valmonte	Sub-surface flow wetland with 40 MG (120 acre-feet) equalization storage volume. The wetland is assumed to have a depth of 6 ft, 4 ft of which contains media. The storage tank is assumed to have a depth of 6 ft. The treatment flow rate is assumed to be 2.0 cfs.	0.01 in/hr	397

² Cost estimates are not provided for planned regional BMPs, including Chandler Quarry and the Botanic Garden Project.

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Additional design details were assumed for the purpose of the cost estimation presented herein, including, but not limited to:

- The percentage of excavated material requiring hauling;
- The type and length of BMP inflow and outflow conveyance structures;
- The type and quantity of vegetation required for the post-BMP condition;
- The type of pre-treatment used for each BMP.

6.2. SUMMARY OF COSTS

Table 6-3 presents the estimated capital cost to construct or implement each structural BMP and associated annual O&M costs. In order to account for possible variations in BMP design, BMP configurations, and site-specific constraints, as well as for uncertainties in available BMP unit costs from literature or estimated BMP unit costs, a range of costs is presented.

Table 6-3: Estimated Capital and O&M Costs for Proposed Structural BMPs

BMP	Capital Cost		Annual O&M	
	Low Cost	High Cost	Low Cost	High Cost
Greater LA Harbor Underground Infiltration Basin at Eastview Park	\$12,800,000	\$16,600,000	\$190,000	\$200,000
Sub-Surface Flow Wetland at the Palos Verdes Landfill	\$57,800,000	\$86,400,000	\$860,000	\$1,000,000
Sub-Surface Flow Wetland at Valmonte	\$19,400,000	\$26,500,000	\$290,000	\$320,000
Total	\$90,000,000	\$129,500,000	\$1,340,000	\$1,520,000

Annual O&M for underground infiltration basins includes cleaning and removal of debris after major storm events, mowing and maintenance of surface vegetated areas, and sediment cleanout. Annual O&M costs were assumed to be 2 percent of the capital cost for infiltration basins.

O&M necessary for maintaining sub-surface flow wetlands includes landscape maintenance, pest control, sediment and pre-treatment cleanout. O&M for sub-surface flow wetlands was estimated at 2 percent of capital costs annually.

Clearly the capital and operation and maintenance costs of these regional projects are very significant. In the case of the two projects which are flow-through treatment systems without groundwater recharge, an end use for this treated stormwater should be identified (e.g. irrigation of local parks and golf courses).

6.3. FINANCIAL STRATEGY

6.3.1. SUMMARY

Financing the implementation of the Peninsula EWMP is the greatest challenge confronting the Peninsula WMG. In the absence of stormwater utility fees (aside from those specified for maintenance), the Participating Agencies have no dedicated revenue stream to pay for implementation of the EWMP. Table 6-4 provides a summary of each agency's General Fund Operating Budget for the 2015-16 fiscal year in comparison to the annual costs for regional BMP construction.

Table 6-4: Fund Availability Summary.

Jurisdiction	Regional BMP Capital Cost per Year ³	General Fund Operating Budget for FY 2015-16
Palos Verdes Estates	\$2,517,500	\$12,185,457
Rancho Palos Verdes	\$20,633,500	\$27,882,209
Rolling Hills Estates	\$25,264,500	\$7,014,725
LA County Unincorporated	\$9,072,000	Unavailable

In addition to current uncertainties associated with costs and funding, there are multiple uncertainties associated with future risks. There will be many deadlines that must be met despite limited resources. The Peninsula Agencies will need to set priorities and seek funding in order to meet the various compliance deadlines. Therefore, to address the Water Quality Priorities (WQPs), the Peninsula WMG is going to pursue a multi-faceted financial strategy. In addition, the Peninsula WMG has coordinated the proposed compliance schedule (see Section 5) with the financial strategy. The Participating Agencies have already begun actively searching for ways to fund the South Coast Botanic Garden, Palos Verdes Landfill, and Valmonte Regional BMPs as they will address the Machado Lake Nutrient TMDL Final Compliance Date of Sept 2018. Methods to fund the Eastview Park Infiltration Project will be pursued no later than 2025 to address the Long Beach and Greater LA Harbor Toxics TMDL Final Compliance Date of March 2032.

The latest Los Angeles MS4 Permit has greatly magnified the financial challenges associated with managing stormwater. The absence of a stable stormwater funding mechanism not tied to municipal General Funds is becoming ever more critical. For that reason, the City Manager Committees of the California Contract Cities Association and the League of California Cities, Los Angeles Division, formed a City Managers' Working Group (Working Group) to review stormwater funding options after the LA County proposed Clean Water, Clean Beaches funding initiative did not move forward. The result was a Stormwater Funding Report⁴ that notes, "the Los Angeles region faces critical, very costly, and seriously underfunded stormwater and urban runoff water quality challenges." The Report found that funding stormwater programs is so complex and dynamic, and the water quality improvement measures so costly, that Permittees cannot depend on a single funding option at this time. The City Managers' report includes a variety of recommendations, including: organizational recommendations; education and outreach program recommendations; recommendations for legislation, such as State Facilities, Stormwater Capture and Use; Source Control or Fee Legislation; Clean Water, Clean Beaches recommendations; local funding options; and recommendations for the Regional Water Board⁵.

³ The annual cost assumes a Regional BMP cost distribution based solely on tributary land area and divided evenly from 2015 to completion. The estimate does not account for monitoring, O&M, MCM implementation, or Nonstructural Targeted Control Measure implementation costs.

⁴ Farfaring, Ken with the City of Signal Hill and Watson, Richard with Richard Watson & Associates. *Stormwater Funding Options – Providing Sustainable Water Quality Funding in Los Angeles County*. October 14, 2014. Prepared for California Contract Cities Association and the League of California Cities, Los Angeles County Division City Managers Committees.

⁵ Ibid.

6.3.2. POTENTIAL FUNDING OPTIONS

The financial strategy to fund the EWMP requires the utilization of multiple funding options. The Peninsula WMG will work together to maximize cost-effectiveness and each individual agency will be responsible for seeking funding for its share in EWMP implementation through a Memorandum of Understanding (MOU) which will be established by December 2016. The sections below outline multiple approaches to funding and allows each jurisdiction to consider and select the funding options that best fit the specific preferences of their agency. For each funding option, a brief description is included that includes benefits and challenges associated.

Resource: Stormwater Funding Report⁶

ORGANIZATIONAL

The Peninsula WMG will consider forming a core group of elected officials to form a committee, including members from the environmental community, the business community, and other stakeholders to improve communication and to reach consensus on fee issues. Each agency has committed funding for continuing work on the Stormwater Funding Options study with the California Contract Cities Association (CCCA).

Additionally, the Peninsula WMG plans to engage with the Sanitation Districts to discuss future partnerships in stormwater programs.

EDUCATION AND OUTREACH

The Peninsula WMG plans to implement public outreach on a watershed-based level. With these efforts the Participating Agencies will have direct communications with the Governor and the Legislature on the funding needs.

LEGISLATION

Legislative action has dramatically changed the face of contemporary stormwater management. This includes passage of laws, adoption of regulations, and interpretation of laws and enforcement of regulations by the courts at local, state and federal levels. These legislative activities impact all aspects of stormwater management by local governments, as well as the private sector, such as developers who provide basic infrastructure as a part of their developments, industrial facilities that discharge stormwater from their properties, and those conducting ground disturbing construction activities. The Peninsula WMG has considered pursuing legislation in the following areas:

- Schools and Public Facilities (i.e. environmental liability waivers; state architect guidance on schools, etc.)
- Stormwater Capture and Reuse (i.e. provide a clear path to monetize the capture and use of stormwater)
- Source Control or Fee Legislation (i.e. pursue reduction of zinc in tires and/or a per-tire zinc reduction fee)
- Special Assessment Districts (i.e. explore the special assessment district concept for funding stormwater projects)

⁷ This process may vary and is dependent on the grant.

Enhanced Watershed Management Program

The challenges associated with legislation include time and resources. Incorporating new legislation requires a significant amount of time and political influence. Although these options have great potential, they will likely not be available in the short term.

FEDERAL AND STATE GRANTS

Federal and State Grant programs are made available for agencies to receive funding for projects which fall under the guidelines of the grant. The most recent example would be the Proposition 1 Stormwater Grant Program which has dedicated \$200 million for LID, greet streets, and regional projects.

Challenges associated with grants include, but are not limited to, the following:

- **Matching Funds.** Almost all grants include matching requirements, which can be up to 50% of the total project costs. Additionally, grant development and administration can take up significant resources, particularly from the small agencies associated with the Peninsula WMG.
- **Shovel ready projects are typically preferred.** Grant programs are generally structured to favor projects that are not “shovel ready” while projects without substantially complete design plans are much less likely to be selected.
- **Grants are competitive.** Each grant program has a set allocation of funds that are available within a defined region (i.e. statewide). As regulatory pressures are increased throughout California and the United States, the competition for securing this type of funding will significantly increase.
- **Not all projects apply.** Project eligibility is dependent on the grant program which may not support the project type as needed.
- **Grants do not provide long-term O&M funding.** In general, grants are structured to help fund project construction costs. Separate funding streams for the operations and maintenance costs would be needed.

The Peninsula WMG is applying for Proposition 1 to fund their catch basin inserts for the Santa Monica Bay Debris TMDL; however, the regional projects outlined in this EWMP were not at an eligible stage.

Although grants are a great option for extra project revenue, it is not a reliable source to depend on as it is unlikely to provide full EWMP implementation or long-term funding.

A general process⁷ for obtaining funds through Federal and State Grants is as follows:

1. The Agency will prepare an application for financial assistance which consists of general, financial, technical, and environmental components.
2. The Agency will submit the application to the State Water Board using the Financial Assistance Application Submittal Tool (FAAST) system.
3. The grant executer reviews the application. If accepted, the project will be added to the project list. In some cases, a second application round with additional information may be required.
4. The grant executer prepares an initial Financial Assistance Agreement based on requested funds.
5. The Agency submits the Final Budget Approval package once the project has been bid on and construction costs finalized.
6. The initial Financial Assistance Agreement is updated with the construction costs and executed. Upon execution, construction costs are eligible for reimbursement, less the matching funds.
7. Upon project completion, the agency would submit a final project report.

⁷ This process may vary and is dependent on the grant.

CLEAN WATER, CLEAN BEACHES

The Participating Agencies will consider a property owner/voter sentiment survey based on new factors and changed circumstances, including a list of specific projects, optional fee amounts and an “opt out” provision. Additionally, the Participating Agencies will explore the formation of the Urban Water Conservation District under the 1931 Act by determining the governance structure under 1931 Act. If it is Board of Supervisors governance, a protest hearing may be considered to vote for a stormwater capture and infiltration fee to fund other program aspects not covered under the 1931 Act Water Conservation District.

Moving forward with a regional stormwater fee vote (such as the LA County Clean Water, Clean Beaches funding initiative) would likely not occur until after June 2015, which means that the first funds would likely not be available until property tax payments are received in 2017. In addition, these amounts may not be sufficient to pay for and maintain expensive stormwater treatment and/or diversion systems if the Peninsula WMG had to depend on such projects to come into compliance with receiving water limitations (RWLs) and water quality-based effluent limitations (WQBELs) specified in the MS4 Permit.

LOCAL STORMWATER FEES

The agencies may consider local stormwater fees, including service related fees or property based fees. Incentives, such as streamlining approval processes and expediting reviews, could be incorporated.

- **Service related fees** could be used to fund portions of stormwater programs. Examples of such fees could include fees associated with new and redevelopment, drainage, environmental impacts, solid waste, water conservation, inspections, or storm drain/BMP maintenance
- **Property based fees** include regular fees associated with land ownership (e.g., stormwater parcel tax) and may be calculated based on factors such as parcel size, impervious surface, land use, water use, etc.

There are extensive challenges associated with implementing these programs. One such challenge is Proposition 218, which requires public approval through a formal ballot initiative for the establishment of new or increases to existing fees associated with stormwater. However, new legislation such as AB2403 may successfully modify the legislative definition of water to include stormwater which could reduce or eliminate the need for a ballot measure to implement stormwater fees. This and other efforts to reform Proposition 218 to include stormwater as a utility may reduce these challenges in the future. As such, coordination with legal counsel will be necessary to determine the most feasible, appropriate, and beneficial approach.

LOCAL FUNDING OPTIONS

The agencies may consider local funding options to address stormwater funding. Local funding options would typically be pursued within individual agencies. Local funding options include:

- Revising street sweeping contracts to provide NPDES trash control programs;
- Adoption of water conservation fees to provide funding for reducing irrigated runoff to conserve water and reduce dry weather discharges;
- Local, statewide, or regional fees on car rentals to contribute to copper and zinc clean-up costs and incorporate stormwater quality features into street and highway projects funded by bonds and other street funds;
- Increase in commercial facility inspection fees

Enhanced Watershed Management Program

Local funding options may be useful for short-term funding; however, it is unlikely that they will result in amounts significant enough to cover any substantial portion of EWMP implementation costs.

CLEAN WATER STATE REVOLVING FUND

The Clean Water State Revolving Fund (CWSRF) program is a federal-state partnership that provides low-cost financing (at half of the most recent General Obligation Bond Rate at the time of funding approval – 1.6% in March 2015) with terms up to 30 years for a wide range of water quality infrastructure projects. The CWSRF could be used to fund individual projects or groups of projects as there is no maximum funding limit. The CWSRF can be used for a variety of projects including stormwater measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water; water conservation, efficiency, and reuse; and watershed pilot projects meeting criteria in CWA §122.

Repayment begins one year after completion of construction, which results in the need for existing revenue to pay back the loans. However, this could give the agencies time to develop more long-term strategies (e.g., local stormwater fees).

The process for obtaining funds through the CWSRF is as follows:

1. The Agency will prepare an application for financial assistance which consists of general, financial, technical, and environmental components.
2. The Agency will submit the application to the State Water Board using the Financial Assistance Application Submittal Tool (FAAST) system.
3. The State Division of Financial Assistance (DFA) reviews the application. If accepted, the project will be added to the project list.
4. DFA prepares an initial Financial Assistance Agreement based on estimated construction costs. At this stage, soft costs, including those incurred prior to the agreement are eligible for reimbursement.
5. The Agency submits the Final Budget Approval package once the project has been bid on and construction costs finalized.
6. The initial Financial Assistance Agreement is updated with the construction costs and executed. Upon execution, construction costs are eligible for reimbursement.
7. Based on the Final Budget Approval package, a construction completion date is established, which sets the initial date for repayment, one year from the construction completion date. Upon project completion, the agency would submit a final project report.

TRANSPORTATION BONDS

Another consideration is future transportation bonds. This can be pursued by encouraging the Metropolitan Transportation Authority (MTA) to include funding stormwater quality features, such as Green Streets, in future bonds and encourage Council of Governments to develop strategic transportation plans that include mitigations designed to address water quality issues from transportation projects.

RECOMMENDATIONS FOR THE REGIONAL WATER QUALITY CONTROL BOARD

Regional Board members and key staff should be available to provide continual education to the agencies regarding the Regional Board’s regulatory programs. The Regional Board should request funding for a staff position that would be responsible to identify and distribute information on the available federal, state, non-profit, corporate and other sources of funds; and establish an on-line resource center to assist the cities in complying with the stormwater permit requirements.

6.3.3. PRIORITIZATION

During the early years of implementation, the Permittees anticipate having to depend largely on local fees such as commercial facility inspection fees and General Fund expenditures to fund the implementation of the nonstructural WCMs.

The Peninsula WMG will seek opportunities to leverage the limited funds available. It will do this by financially supporting the efforts of others, such as the California Stormwater Quality Association (CASQA), to seek State approval of true source control measures such as implementation of the Safer Consumer Product Regulations adopted by the Department of Toxic Substances Control in 2013. The Group will also support programs to increase water conservation, reduce dry-weather discharges to the storm drain system, and reduce TSS during wet weather. Successfully accomplishing these efforts could reduce the funds needed in the long term to capture and/or treat stormwater discharges to comply with TMDLs and address other WQPs.

Legislative solutions will be necessary to clarify the application of Proposition 218 to fees for the capture and use of stormwater in light of a recent 6th Appellate Court decision and to ensure that any State water bond put on the ballot in fall 2015 contains funding for stormwater quality projects. The Group will also support local and statewide efforts to amend Proposition 218 to have stormwater fees treated in the same manner as water, sewage, and refuse fees. The Peninsula WMG and/or the Participating Agencies will also seek grants (i.e. IRWMP, Proposition 84, etc.) to implement stormwater BMPs.

In the long term, financing the WCMs for the Peninsula Watershed will require establishing dependable revenue streams for local water quality programs. Accomplishing this formidable task will require the cooperation of many entities, including business and environmental organizations and the Regional Board. Participating Agencies will begin utilizing existing funds to implement the EWMP as well as pursue additional funding in accordance with Table 6-5 below.

Table 6-5: Funding Option Priorities.

Agency	Funding Priorities	Integration with Existing Infrastructure Improvement Plans
County	<ol style="list-style-type: none"> 1. Federal and State Grants 2. Seek allocation in the General Fund; investigate bond and loan opportunities (i.e. CWSRF) 3. Continued participation in stormwater funding advocacy efforts led by the League of California Cities and California Contract Cities 	<ul style="list-style-type: none"> • Development of a stormwater capital improvement plan for existing public facilities by December 2018 • Update infrastructure design guidelines with sustainable practices, including stormwater capture BMPs by December 2018
LACFCD	<ol style="list-style-type: none"> 1. Federal and State Grants 2. Seek allocation in the Flood Fund 	<ul style="list-style-type: none"> • Development of a stormwater capital improvement plan for existing public facilities by December 2018
RPV	<ol style="list-style-type: none"> 1. Federal and State Grants 2. Local Funding Options & Stormwater Fees 3. Continued participation in stormwater funding advocacy efforts led by the League of California Cities and California Contract Cities 	<ul style="list-style-type: none"> • Development of a stormwater capital improvement plan for existing public facilities by December 2018
PVE	<ol style="list-style-type: none"> 1. Federal and State Grants 2. Local Funding Options & Stormwater Fees 3. Continued participation in stormwater funding advocacy efforts led by the League of California Cities and California Contract Cities 	<ul style="list-style-type: none"> • Development of a stormwater capital improvement plan for existing public facilities by December 2018
RHE	<ol style="list-style-type: none"> 1. Federal and State Grants 2. Local Funding Options & Stormwater Fees 3. Continued participation in stormwater funding advocacy efforts led by the League of California Cities and California Contract Cities 	<ul style="list-style-type: none"> • Development of a stormwater capital improvement plan for existing public facilities by December 2018

7. LEGAL AUTHORITY

MS4 Permit §VI.C.5.b.iv.6

This section covers information such as documentation and references/links to water quality ordinances for each participating agency. These documents demonstrate adequate legal authority to implement and enforce Watershed Control Measures (WCMs) identified in this plan and as required in Section VI.D.5.b.iv.6 of the MS4 Permit. The goal of these WCMs is to create an efficient program that focuses on the watershed priorities by meeting the following objectives:

- Prevent or eliminate non-storm water discharges to the MS4 that are a source of pollutants from the MS4 to receiving waters.
- Implement pollutant controls necessary to achieve all applicable interim and final water quality-based effluent limitations and/or receiving water limitations pursuant to corresponding compliance schedules.
- Ensure that discharges from the MS4 do not cause or contribute to exceedances of receiving water limitations.

The WCMs include the minimum control measures, nonstormwater discharge measures and targeted control measures (i.e. controls to address TMDL and 303(d) listings). As the requirement to incorporate these WCMs is an element of the MS4 Permit, the legal authority to implement them results from each agency’s legal authority to implement the NPDES MS4 Permit.

A copy of each participating agency's legal authority certification from their chief legal counsel can be found in Appendix 7. Table 7-1 includes the water quality ordinance for each agency with a reference link. Additionally, the participating agencies have developed and adopted LID ordinances and Green Street Policies which provides legal authority to enforce the Planning and Land Development Program.

Table 7-1: Water Quality Ordinance Language

City	Water Quality Ordinance	Reference
Rancho Palos Verdes	Chapter 13.10 - STORM WATER AND URBAN RUNOFF POLLUTION CONTROL	https://www.municode.com/library/ca/rancho_palos_verdes/codes/code_of_ordinances?nodid=TIT13PUSE_CH13.10STWAURRUPOCO
13.10.020 Purpose – This chapter is also intended to provide the city with the legal authority necessary to control discharges to and from those portions of the municipal storm water system over which it has jurisdiction as required by the municipal NPDES permit.		
Palos Verdes Estates	Chapter 13.08 – STORM DRAINS AND STORM WATER MANAGEMENT AND POLLUTION CONTROL	http://www.codepublishing.com/ca/palosverdes/estates/
13.08.040 Construction and Application – The provisions of this chapter shall be construed to assure consistency with the requirements of the federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing regulations, and existing or future NPDES permits, and any amendment, revision or re-issuance thereof. Any person who violates any provision of this chapter may also be in violation of such federal act, NPDES permit, or other federal or state law, and subject to the sanctions thereof.		
Rolling Hills Estates	Chapter 8.38 - STORMWATER AND URBAN RUNOFF POLLUTION CONTROL	https://www.municode.com/library/ca/rolling_hills_estates/codes/code_of_ordinances?nodid=TIT8HESA_CH8.38STURRUPOCO_8.38.010TI
8.38.030 Purpose and Intent – This chapter is also intended to provide the city with legal authority as required by the municipal NPDES permit.		
LACFCD	Flood Control District Code, Chapter 21 - Stormwater and Runoff Pollution Control	https://library.municode.com/HTML/16274/level2/FLCODICO_CH21STRUPOCO.html#FLCODICO_CH21STRUPOCO_21.01PUIN
21.01 - Purpose and Intent - The purpose and intent of this chapter is to regulate the stormwater and non-stormwater discharges to the facilities of the Los Angeles County Flood Control District for the protection of those facilities, the water quality of the waters in and downstream of those facilities, and the quality of the water that is being stored in water-bearing zones underground.		

8. COORDINATED INTEGRATED MONITORING PROGRAM

The Participating Agencies have developed a customized Coordinated Integrated Monitoring Program (CIMP). The CIMP, based on the provisions set forth in Attachment E, Part IV of the MS4 Permit, assesses progress toward achieving the water quality-based effluent limitations (WQBELs) and receiving water limitations (RWLs) per the compliance schedules, and progress toward addressing water quality priorities. The customized CIMP is designed to address the Primary Objectives detailed in Attachment E, Part II.A of the MS4 Permit and includes the following program elements:

- Receiving Water Monitoring
- Storm Water Outfall Monitoring
- Non-Storm Water Outfall Monitoring
- New Development/Re-Development Effectiveness Tracking
- Regional Studies

The CIMP is currently under separate review by the Regional Water Quality Control Board.

9. ADAPTIVE MANAGEMENT PROCESS

Adaptive management is the process by which new information about the state of the watershed is incorporated into the EWMP. The EWMP is adaptively managed following the process described in Permit §IV.C.8. The process is implemented by the participating agencies every two years from the date of EWMP approval by the Regional Water Board (or by the Executive Officer on behalf of the Regional Water Board). The purpose of the adaptive management process is to improve the effectiveness of the EWMP based on – but not limited to – consideration of the following:

1. Progress toward achieving interim and/or final water quality-based effluent limitations and/or receiving water limitations in §VI.E and Attachments L through R of the MS4 Permit, according to established compliance schedules;
2. Progress toward achieving improved water quality in MS4 discharges and achieving receiving water limitations through implementation of the watershed control measures based on an evaluation of outfall-based monitoring data and receiving water monitoring data;
3. Achievement of interim milestones;
4. Reopening of TMDLs;
5. Re-evaluation of the water quality priorities identified for the Watershed Management Area (WMA) based on more recent water quality data for discharges from the MS4 and the receiving water(s) and a reassessment of sources of pollutants in MS4 discharges;
6. Availability of new information and data from sources other than the MS4 Permittees' monitoring program(s) within the WMA that informs the effectiveness of the actions implemented by the Permittees;
7. Regional Water Board recommendations; and
8. Recommendations for modifications to the Enhanced Watershed Management Program solicited through a public participation process.

9.1. MODIFICATIONS

Based on the results of the adaptive management process, the participating agencies may find that modifications of the EWMP are necessary to improve effectiveness. Modifications may include new compliance deadlines and interim milestones, with the exception of those compliance deadlines established in a TMDL.

9.1.1. REPORTING

Modifications are reported in the Annual Report, as required pursuant to Part XVIII.A.6 of the Permit Monitoring and Reporting Program (No. CI-6958), and as part of the Report of Waste Discharge (ROWD) required pursuant to Part II.B of Attachment D – Standard Provisions. The background and rationale for these modifications are included by addressing the following points:

- Identify the most effective control measures and describe why the measures were effective and how other control measures will be optimized based on past experiences.
- Identify the least effective control measures and describe why the measures were deemed ineffective and how the control measures will be modified or terminated.
- Identify significant changes to control measures during the prior year and the rationale for the changes.
- Describe all significant changes to control measures anticipated to be made in the next year and the rationale for the changes. Those changes requiring approval of the Regional Water Board or its Executive Officer shall be clearly identified at the beginning of the Annual Report.
- Include a detailed description of control measures to be applied to New Development or Re-development projects disturbing more than 50 acres.
- Provide the status of all multi-year efforts that were not completed in the current year and will continue into the subsequent year(s).
- Provide the status of multi-year/future regional BMPs, both planned and proposed.
- Provide the status of efforts to secure funding for structural TCMs both for capital investments and O&M.

9.1.2. IMPLEMENTATION

Modifications are implemented upon approval by the Regional Water Board Executive Officer or within 60 days of submittal if the Regional Water Board Executive Officer expresses no objections.

9.2. RECEIVING WATER LIMITATIONS

The adaptive management process fulfills the requirements in MS4 Permit §V.A.4 to address continuing exceedances of receiving water limitations.

10. REPORTING PROGRAM & ASSESSMENT

10.1. ANNUAL REPORT

Permit MRP §XV.A

Each year on or before December 15th, the participating agencies will submit, either jointly or individually, an annual report to the Regional Water Board Executive Officer. The annual report will present a summary of information that will allow the Regional Board to assess implementation and effectiveness of the watershed management program¹.

The reporting process is intended to meet the following objectives:

- Each agency's participation in the Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program.
- The impact of each agency's storm water and non-storm water discharges on the receiving water.
- Compliance with receiving water limitations, numeric water quality-based effluent limitations, and non-storm water action levels.
- The effectiveness of control measures in reducing discharges of pollutants from the MS4 to receiving waters.
- Whether the quality of MS4 discharges and the health of receiving waters is improving, staying the same, or declining as a result watershed management program efforts, and/or TMDL implementation measures, or other Minimum Control Measures.
- Whether changes in water quality can be attributed to pollutant controls imposed on new development, re-development, or retrofit projects.

Annual Report will identify data collected and strategies, control measures and assessments implemented for each watershed within the participating agency's jurisdiction. The report will include summaries for each of the following seven sections as required by the MS4 Permit:

- 1) Stormwater Control Measures - Summary of New Development/Re-development Projects, actions to comply with TMDL provisions
- 2) Effectiveness Assessment of Stormwater Control Measures - Summary of rainfall data, provide assessment and compare water quality data, summary to whether or not water quality is improving
- 3) Non-Stormwater Control Measures - Summary of outfalls screening
- 4) Effectiveness Assessment of Non-Storm Water Control Measures - Summary of the effectiveness of control measures implemented
- 5) Integrated Monitoring Compliance Report - Report with summary of all identified exceedances of outfall-based stormwater monitoring data, we weather receiving water monitoring data, dry weather receiving water data and non-storm water outfall monitoring data
- 6) Adaptive Management Strategies - Summary of effective, less effective control measures
- 7) Supporting Data and Information - Monitoring data summary

The participating agencies will submit annual reports as required by the MS4 Permit. The Regional Board is currently preparing a reporting format. Once available, the reporting form will be incorporated into the EWMP as an appendix.

¹ Annual reports will cover summary from previous fiscal year beginning June 1st through July 30th.

10.1.1. DATA REPORTING

Permit MRP §XIV.L

Analytical data reports will be submitted on a semi-annual basis. Data will be sent electronically to the Regional Water Board's Storm Water site at MS4stormwaterRB4@waterboards.ca.gov. These data reports will summarize:

- Exceedances of applicable WQBELs, receiving water limitations, or any available interim action levels or other aquatic toxicity thresholds.
- Basic information regarding sampling dates, locations, or other pertinent documentation.

10.1.2. CHRONIC TOXICITY REPORTING

Permit MRP §XII.K

Aquatic toxicity monitoring results will be submitted to the Regional Board on an annual basis as part of the integrated monitoring compliance report as well as in the semi-annual basis data report submittal.

10.2. WATERSHED REPORT

Permit MRP §XVII.A

The participating agencies will submit biennial watershed reports as required by the MS4 Permit to the Regional Water Board Executive Officer. This biennial report, which will be included in the annual report in odd years, will include information related to the following sections:

- Watershed Management Area
- Subwatershed (HUC-12) Description
- Permittees Drainage Area within the Subwatershed

Per MS4 Permit § XVII.B, the participating agencies may reference the Enhanced Watershed Management Program (EWMP) in the odd-year report, when the required information is already included or addressed in this EWMP, to satisfy baseline information requirements.

The Regional Board is currently preparing a reporting format. Once available, the reporting form will be incorporated into the EWMP as an appendix.

10.3. TMDL REPORTING

Permit MRP §XIX

The participating agencies will also submit an annual report to the Regional Water Board Executive Officer regarding progress of TMDL implementation within the watershed.

The TMDLs that will be addressed in the report are listed below:

- Santa Monica Bay Beaches Wet Weather Bacteria TMDL – Group 7
- Santa Monica Bay Beaches Dry Weather Bacteria TMDL – Group 7
- Santa Monica Bay Nearshore and Offshore Debris TMDL
- Machado Lake Trash TMDL
- Machado Lake Nutrient TMDL
- Machado Lake Pesticides and PCBs (Toxics) TMDL
- Dominguez Channel, Greater Los Angeles, and Long Beach Harbor Waters Toxic Pollutants TMDL
- Santa Monica Bay TMDL for DDTs and PCBs

The Regional Board is currently preparing a reporting format. Once available, the reporting form will be incorporated into the EWMP as an appendix.