

Preface

Executive Summary

Section 1 Introduction

1.1 TMDL Development History.....1-1
 1.2 Marina del Rey Watershed Responsible Agencies.....1-1
 1.3 Implementation Plan Objectives.....1-2

Section 2 Background

2.1 TMDL Summary.....2-1
 2.1.1 Compliance Targets and Allocations..... 2-2
 2.1.2 Compliance Monitoring.....2-3
 2.1.3 Compliance Schedule.....2-3
 2.2 Marina del Rey Watershed.....2-4
 2.2.1 Watershed Description.....2-4
 2.2.2 Land Use.....2-5
 2.2.3 Water Quality Issues.....2-8

Section 3 Implementation Strategy

3.1 Iterative Adaptive Approach.....3-1
 3.2 Effectiveness Monitoring Analysis and Results.....3-2
 3.3 Cost Tracking and Analysis.....3-2
 3.4 Consistent Reporting Procedures.....3-2
 3.5 Cost/Effectiveness/Efficiency Ratio Analysis.....3-2
 3.6 Revising Control Programs.....3-3

Section 4 Proposed Implementation Plan

4.1 General Compliance Approach.....4-1
 4.1.1 The Hybrid Approach.....4-2
 4.2 Public Information and Participation Program.....4-2
 4.2.1 Inter-Agency Coordination.....4-4
 4.2.2 Industry-Specific BMP Outreach.....4-5
 4.2.3 Advertising.....4-6
 4.2.4 Media Relations.....4-7
 4.2.5 Pollutant-Specific Outreach.....4-8
 4.2.6 School Outreach.....4-9
 4.2.7 Adopt-A-Highway Program.....4-10
 4.3 Institutional Control Program.....4-13
 4.3.1 Storm Drain System Management.....4-13
 4.3.2 Proper Pet Waste Disposal.....4-15
 4.3.3 Sanitary Sewer Management Program.....4-15
 4.3.4 Illicit Connections/Illicit Discharge.....4-17
 4.3.5 Street Infrastructure Management.....4-18

- 4.3.6 Recreational and Other Public Facilities Management.....4-19
- 4.3.7 Public Parking Facilities Management.....4-20
- 4.3.8 Boating Facilities Management.....4-21
- 4.3.9 Development Planning.....4-23
- 4.3.10 Industrial/Commercial Facilities Control Program.....4-24
- 4.3.11 Code and Ordinance Review Program.....4-25
- 4.3.12 Special/Holiday Events.....4-26
- 4.3.13 Business Improvement Districts.....4-27
- 4.4 Structural BMPs Program.....4-31
 - 4.4.1 Non-Storm Water Discharge Controls.....4-36
 - 4.4.2 Storm Water Discharge Controls.....4-42
- 4.5 Studies and Research.....4-61
 - 4.5.1 Non-Point Source Study.....4-61
 - 4.5.2 Additional Optional Bacteriological Studies.....4-63
 - 4.5.3 BMP Studies.....4-65
 - 4.5.4 Reference System Study.....4-65
 - 4.5.5 Epidemiological Study For Beaches Not Impacted by Sewage Contamination.....4-66
 - 4.5.6 Marina del Rey Watershed Boundary Study.....4-66
 - 4.5.7 Other.....4-66
- 4.6 Monitoring.....4-67
 - 4.6.1 Baseline and Effectiveness4-67
 - 4.6.2 Analysis and Reporting4-67
- 4.7 Estimated Implementation Cost.....4-68
 - 4.7.1 Non-Storm Water Discharge Controls.....4-68
 - 4.7.2 Institutional Controls.....4-69
 - 4.7.3 Public Information and Participation Program.....4-69
 - 4.7.4 Sub-Regional Structural BMP Program.....4-69
 - 4.7.5 Total Estimated Implementation Costs.....4-70

Section 5 Proposed Implementation Plan Schedules

- 5.1 TMDL Schedules and Milestones.....5-1
- 5.2 Natural Disasters, Human Acts, and Fiscal Crisis.....5-2

Section 6 References

Tables

Table 4.1	Agency Commitment and Implementation schedule for the Public Information and Participation Program.....	4-11
Table 4.2	Storm Drain Outlets that Discharge to the Impaired Back Basins.....	4-14
Table 4.3	Agency Responsibilities, Ratings of Potential Effectiveness, and Implementation schedule for the Institutional Solutions Action Items.....	4-29
Table 4.4.1	Summary of Structural BMP Strategies for the Priority Tributary Areas (Non-Storm Water Discharge Controls).....	4-36
Table 4.4.2	Summary of Structural BMP Strategies for the Priority Tributary Areas (Storm Water Discharge Controls	4-43
Table 4.4.3	Summary of Potential BMP Projects at Public Sties.....	4-49
Table 4.4.4	Sub-Regional Structural BMP Program – Proposed Implementation Schedule.....	4-50
Table 4.5	Summary of the Proposed Implementation Programs.....	4-69

Figures

Figure 2.1	Marina del Rey Watershed.....	2-6
Figure 2.2	Marina del Rey Watershed Land Use.....	2-7
Figure 4.1	Areas Considered for Business Improvement Districts.....	4-28
Figure 4.2	Average Ground Water Contours and Bore Log Data Locations, Venice Quadrangle.....	4-34
Figure 4.3	Marina del Rey Redevelopment Status	4-35
Figure 4.4	Proposed Low-Flow Diversions for Marina del Rey	4-39
Figure 4.5	Marina del Rey Area, All Parcels, Private and Public	4-48

Appendices

- A: Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL (March 24, 2004, Revision to the Final Amendment)
- B: California Department of Transportation Statewide Stormwater National Pollutant Discharge Elimination System Program Activities

Acronyms and Abbreviations

AMS	Asset Management Strategy
BID	Business Improvement District
BMP	Best Management Practice
BOS	Bureau of Sanitation, City of Los Angeles
Caltrans	California Department of Transportation
CCTV	Closed-Circuit Television
CCC	California Coastal Commission
CMP	Coordinated Compliance Monitoring Plan
CRA	California Restaurant Association
IC/ID	Illicit Connection/Illicit Discharge
IPM	Implementation Project Manager
IRP	Integrated Resources Planning
IWRA	Integrated Water Resources Approach
LACDBH	County of Los Angeles Department of Beaches and Harbors
LACDHS	County of Los Angeles Department of Health Services
LACFCD	County of Los Angeles Flood Control District
LARWQCB	California Regional Water Quality Control Board, Los Angeles Region
LAUSD	Los Angeles Unified School District
LA-1	Lincoln Boulevard (Caltrans' State Highway)
LA-187	Venice Boulevard (Caltrans' State Highway)
LAX	Los Angeles International Airport
LCP	Local Coastal Program
LFD	Low Flow Diversion
LID	Low Impact Development
MdRH	Marina del Rey Harbor
MDRWRA	Marina del Rey Watershed Responsible Agencies
MPN	Most Probable Number. Refers to bacterial indicator density #/l
MS4	Municipal Separate Storm Sewer Systems
MSMD	Marina Sewer Maintenance District
NGO	Non-Governmental Organization
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance
PIPP	Public Information and Participation Program
PPP	Pollution Prevention Partner
Public Works	County of Los Angeles Department of Public Works
RV	Recreational Vehicle
SCCWRP	Southern California Coastal Waters Research Project
SUSMP	Standard Urban Stormwater Mitigation Plan
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
VNR	Video News Release
WLAs	Waste Load Allocations
WQMP	Water Quality Management Plan

This implementation plan is being submitted to the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) as a requirement of the Marina del Rey Harbor Marina Beach and Back Basins Bacteria Total Maximum Daily Load (TMDL) Resolution No. 2003-012 dated September 4, 2003.

This implementation plan presents the plans developed by the Marina del Rey Watershed responsible agencies (MDRWRA) to meet the current bacterial indicator standards for dry-and wet-weather and to address pollutants such as metals and toxics that are anticipated to be in the future TMDLs. This implementation plan embraces the iterative adaptive approach, addresses multiple pollutants, and incorporates beneficial water reuse. This implementation plan was put together by the MDRWRA (County of Los Angeles, Cities of Los Angeles and Culver City, and California Department of Transportation) through a collaborative effort with interested stakeholders, the LARWQCB and the Santa Monica BayKeeper. The MDRWRA and the interested stakeholders met on a monthly basis starting in April 2004.

Since the Santa Monica Bay Beaches Bacteria TMDL was adopted earlier, some of the approaches used in this implementation plan, such as the Integrated Water Resources (IWR) approach and the iterative adaptive approach, are consistent with the compliance approaches developed by the Santa Monica Bay Beaches TMDL Jurisdictional Group 2 and 3. The Santa Monica Bay Beaches TMDL Jurisdictional Group 2 and 3 is led by the Cities of Los Angeles and Santa Monica.

It should be noted that many of the proposed actions suggested in this implementation plan are specifically tailored for the Marina del Rey Watershed and may not be appropriate for areas outside of Marina del Rey Watershed due to different characteristics, issues, pollutants of concern, and responsible agencies involvement.

ES-1.0 Introduction

The purpose of this implementation plan is to document and establish the procedures and actions of the Marina del Rey Watershed responsible agencies (MDRWRA) to comply with the California Regional Water Quality Control Board Los Angeles Region’s (LARWQCB’s) Resolution No. 2003-012 Total Maximum Daily Load (TMDL) to Reduce Bacterial Indicator Densities at Marina del Rey Harbor Mothers’ Beach and Back Basins dated September 4, 2003.

The implementation plan addresses both the dry-and wet-weather compliance for Back Basins D (including Marina Beach, also commonly known as Mothers’ Beach), E, and F. The implementation plan describes methods, mechanisms, and timeframes to achieve this TMDL regulatory compliance.

The following is a summary of the key TMDL milestones:

- ❖ March 18, 2007, for dry-weather compliance
- ❖ From March 18, 2014, to March 18, 2022, for wet-weather compliance

The following is a summary of deadlines for the action items in the TMDL based on the effective date of March 18, 2004:

Date	Action	Status
July 16, 2004	Compliance Monitoring Plan	Submitted on July 15, 2004 and awaiting approval
July 16, 2004	Small Drain Study	Submitted on July 16, 2004
July 16, 2004	Beaches and Harbors Discharge Report	Submitted on July 16, 2004
Draft-March 30, 2005 Final-July 30/October 31, 2005	Implementation Plan	Submitted draft on March 30, 2005
March 18, 2007	Non-point Source Study	Will be submitted on March 18, 2007

ES-2.0 Background

ES-2.1 Regulatory Background

The 1972 Clean Water Act established regulations and mechanisms to clean up the Nation’s polluted waterways. Included were provisions for Total Maximum Daily Loads to address pollution. In 1987, stormwater runoff was also recognized as a significant contributor to pollution in lakes, rivers, streams, and oceans.

The California Water Resources Control Board assigns beneficial uses for California’s water bodies. Beneficial uses may include drinking water supply, swimming, fishing,

habitat, to name just a few. When a water body becomes polluted, it is designated as impaired. The Clean Water Act required impaired water bodies to be placed on a list (subsequently called the 303(d) List), a TMDL issued, and cleanup efforts to result.

Litigation and a resulting consent decree between the United States Environmental Protection Agency (USEPA) and environmental groups have caused a legal deadline to be established for the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL. Another deadline has also been established for the Marina del Rey Metals and Toxics TMDL, which is expected to be approved by the State within a year.

On March 18, 2004, the LARWQCB promulgated the TMDL for bacteria in Marina del Rey Harbor (MdRH) for the back basins (Basins D, E, and F) and Marina Beach.

ES-2.2 Compliance Targets and Wasteload Allocations

The TMDL established bacterial compliance targets and Waste Load Allocations (WLAs). The TMDL's WLAs are expressed as allowable exceedance days or the maximum number of days where sampling results can surpass the established Assembly Bill 411 standards without exceeding the limits in the TMDL. The allowable exceedance days concept grew out of research, using a local reference system, Arroyo Sequit, located near the Los Angeles and Ventura County borderline, showing that even a watershed with minimal human impact will contribute significant bacterial loading to the receiving water body, especially during a storm event. Therefore, by employing the allowable exceedance days approach in establishing the WLAs, the LARWQCB accounts for bacteria loading from non-anthropogenic sources.

The TMDL bacterial indicator standards are as follows:

1. 30-Day Geometric Mean Limits

- a. *Total coliform density shall not exceed 1,000 /100ml.*
- b. *Fecal coliform density shall not exceed 200/100ml.*
- c. *Enterococcus density shall not exceed 35/100ml.*

2. Single Sample Limits

- a. *Total coliform density shall not exceed 10,000/ 100ml.*
- b. *Fecal coliform density shall not exceed 400/100ml.*
- c. *Enterococcus density shall not exceed 104/100ml.*

ES-2.3 TMDL Responsible Agencies

The LARWQCB designated the County of Los Angeles as the lead of the MDRWRA. The County of Los Angeles Department of Public Works (Public Works), Department of Beaches and Harbors (LACDBH), and Department of Sheriff/Harbormaster primarily represent the County. The other agencies responsible for compliance with the TMDL

are the Cities of Los Angeles and Culver City, and California Department of Transportation (Caltrans)

The MDRWRA first met in April 2004 along with the LARWQCB, two key environmental groups (Heal the Bay and Santa Monica BayKeeper), and representatives from the Marina del Rey Lessees Association. Together with the stakeholders, the MDRWRA have created this implementation plan. The MDRWRA met monthly.

ES-2.4 Watershed Description and Land Use

The Marina del Rey Watershed is comprised of five subwatersheds, but only Subwatersheds 1A, 3 and 4 are tributary directly to the impaired back basins (Basins D, E and F).

The Marina del Rey Watershed can be characterized by three main parts:

- ✓ The Harbor water area, including the docks, back basins, Marina Beach, and Oxford Retention Basin (Oxford Basin).
- ✓ The land adjacent to the Harbor back basins is the Los Angeles County unincorporated area, which includes individual parcels, streets, and other facilities.
- ✓ The land outside the Los Angeles County unincorporated area draining into the Harbor waters, including the Cities of Los Angeles and Culver City, and Caltrans right of ways.

Marina del Rey Harbor is open to the Santa Monica Bay through the Main Channel and it shares a common breakwater with Ballona Creek. The Harbor consists of the Main Channel and eight back basins (A-H). Marina Beach is located in the west end of Basin D.

Oxford Basin is situated at the north end of Marina del Rey Harbor and drains to Basin E through two slide gates and a culvert system. Oxford Basin serves as a retention basin for the surrounding watershed and the slide gates control tidal influence on its water level. County of Los Angeles Flood Control District (LACFCD) storm drain Project No. 5243¹ drains into the northeast corner of Oxford Basin and Project No. 3872 drains into the east side of Oxford Basin via Oxford Pump Plant. Project No. 3874 drains into Basin E via the Boone-Olive Pump Plant.

The Small Drain Study² identified over 720 other smaller drainage systems draining into the Harbor. Most of these systems serve the individual parcels and mole roads between basins. The remaining drains serves the Marina del Rey's streets surrounding the basins.

¹ This follows the County of Los Angeles Flood Control District's naming convention for storm drain facilities

² Marina del Rey Small Drain Study, 2004, Los Angeles County, Department of Public Works, Watershed Management Division

The Marina del Rey Watershed was developed in two general stages. The area surrounding the Harbor was developed from the late 1800's into the early 1900's, and the Marina was constructed in the early 1960s from the remnants of the Ballona Creek Wetlands and Estuary. Marina del Rey was subsequently developed with a variety of different uses and facilities including housing, restaurants, commercial/retail, office, and marine/boating.

The Marina del Rey Watershed is approximately 1,855 acres (2.9 square miles) in size and lies within the City of Los Angeles (53%), County unincorporated (44%), City of Culver City (2%), and Caltrans (1%). The predominant land uses are residential (46.6%), commercial/office (12.2%), receiving waters of MdRH (11.6%), marina facilities (9.2%), open space/recreational (4.8%), light industrial/vacant (4.7%), and educational/transportation/other (10.9%).

ES-3.0 Implementation Strategies and Actions

ES-3.1 Implementation Strategy

The key feature of this implementation plan is establishing a process that has the flexibility to provide multiple benefits, address multiple pollutants, and have a methodology/process to adapt itself as the plan is implemented and effectiveness is evaluated. This process follows the Integrated Water Resources Approach (IWR) by using an iterative adaptive approach. This process will also establish a cost tracking system so that a cost/effectiveness/efficiency analysis can be performed for each selected implementation action. Cost/effectiveness/efficiency analysis results can be evaluated to select implementation actions with the “most bang for the buck” in subsequent iterations.

The iterative adaptive approach is characterized by several principal features:

- ✓ Baseline - Establish current conditions with existing data or new monitoring.
- ✓ Proposed possible action items - Establish performance criteria and expected results.
- ✓ Implement action - Continue current practices and perform proposed actions.
- ✓ Evaluate performance - Use compliance or source identification monitoring, Best Management Practices monitoring, etc., to evaluate progress in meeting compliance goals.
- ✓ Adapt action - If successful, do more, if not, correct action, or abandon action.
- ✓ Iterate process - Repeat until desired results are obtained.

ES-3.2 Monitoring and Reporting

Monitoring and reporting are expected to be a key component of the implementation plan because it provides the MDRWRA with the information to successfully meet the water quality objectives of the TMDL. The monitoring data and the resulting analysis will form one part of the basis for the iterative adaptive approach and the decisions made to revise the selected implementation measures.

ES-3.3 Cost Tracking

Another important part of the iterative adaptive approach is program cost tracking, reporting, and analysis. Along with program performance, cost will be a factor that the MDRWRA use in evaluating implementation performance. Unexpected excessive costs due to low BMP efficiency or maintenance difficulties may require a change in the implementation approach. The MDRWRA are encouraged to establish uniform cost accounting procedures to assist in the iterative adaptive process.

ES-3.4 Implementation Approach

The MDRWRA considered three different compliance approaches, chose the best features from each, incorporated the iterative adaptive process, and developed the Hybrid approach. This approach is based on the compliance approach developed by the Santa Monica Bay Beaches Bacteria TMDL Jurisdictional Groups 2 and 3¹. The following three approaches were considered:

- ✓ Low Cost
- ✓ Low Risk
- ✓ Maximum Beneficial Reuse

The Low Cost approach considers actions and philosophies designed to minimize costs, and generally these are institutional controls. This approach assumes a higher level of non-compliance risk. Control Programs are structured in phases in an iterative adaptive approach, where they are evaluated for effectiveness and modified/adapted accordingly. Sub-regional control associated with this approach generally may not stress beneficial reuse unless it is the low cost option at that site. Since only a few programs are implemented at a time, the costs are lower.

The Low Risk approach considers implementing the Control Programs designed to ensure compliance with less emphasis on costs and beneficial reuse. This approach treats the most runoff volume and incorporates the institutional controls of the Low Cost approach, but substitutes regional control for the sub-regional control. Regional control consists of large-scale and costly water quality treatment plants. Oxford Basin was identified as a potential location for a regional control opportunity, if needed.

¹Santa Monica Bay Beaches Bacteria Total Maximum Daily Loads Draft Implementation Plan, Jurisdiction 2 and 3, Section 3.7, March 2005

The Maximum Beneficial Reuse approach considers managing as much runoff as possible and reusing it. This approach uses the same Control Programs as the Low Risk approach, but includes additional features to beneficially reuse the treated runoff. Treated water from the Oxford Basin could be reused to irrigate the landscaping in street medians, parks, and other public and private properties vegetation. A new dedicated distribution system would be required. The cost of this approach is expected to be considerably higher than the Low Risk approach due to the additional infrastructure required to reuse the treated runoff.

Each of the three approaches has its advantages and disadvantages. The MDRWRA evaluated each of these options, discussed the process used by the Santa Monica Bay Beaches TMDL Jurisdictional Group 2 and 3, and decided to pursue the Hybrid approach.

This approach combines the best features of the three and results in a better, more balanced plan as discussed below.

- ❑ Cost - The Hybrid approach acknowledges cost as a significant consideration by building in a cost/benefit/effectiveness analysis as part of the iterative adaptive approach, which allows the MDRWRA flexibility in choosing measures with varying levels of risk and cost.
- ❑ Low Risk - The Hybrid approach acknowledges risk as a significant consideration by using a multiple Control Programs to lower risk. Each of these programs accomplishes implementation through different mechanisms and provides concurrent benefits.
- ❑ Maximum Beneficial Reuse - The Hybrid approach acknowledges Maximum Beneficial Reuse as a significant consideration by incorporating reuse in sub-regional controls.

The Hybrid approach uses the iterative adaptive process, addresses multiple pollutants, and has beneficial reuse components. This approach features the following Control Programs:

- ✓ Public Information and Participation Program
- ✓ Institutional Control Program
- ✓ Structural BMPs Program

The three programs are further divided into sub-categories as follows:

- ❖ **Public Information and Participation Program**
 - ❑ Inter-Agency Coordination
 - ❑ Industry-Specific BMP Outreach
 - ❑ Advertising
 - ❑ Media Relations
 - ❑ Pollutant-Specific Outreach

- ❑ School Outreach
- ❑ Adopt-A-Highway Program

❖ **Institutional Control Program**

- ❑ Storm Drain System Management
- ❑ Proper Pet Waste Disposal
- ❑ Sanitary Sewer Management Program
- ❑ Illicit Connections/Illicit Discharges
- ❑ Street Infrastructure Management
- ❑ Recreational and Other Public Facilities Management
- ❑ Public Parking Facilities Management
- ❑ Boating Facilities Management
- ❑ Development Planning
- ❑ Industrial/Commercial Facilities Control Program
- ❑ Code and Ordinance Review Program
- ❑ Special/Holiday Events
- ❑ Business Improvement Districts

❖ **Structural BMPs Program**

- ❑ Non-Storm Water Discharge Controls
 - ✓ Low-Flow Storm Drain Diversion Program
 - ✓ Marina Beach Water Quality Improvement Project (Increase Basin D Circulation)
 - ✓ Marina Source Identification and Control Program
- ❑ Storm Water Discharge Controls
 - ✓ Sub-Regional Structural BMP Program
 - ✓ Marina Beach Water Quality Improvement Project (Increase Basin D Circulation and Sheet Flow Diversion)
 - ✓ Regional Structural BMP Program (if feasible)

ES-3.5 TMDL Implementation Cost

The total implementation plan cost is estimated to be between \$53M and \$60M broken down as follows:

- ❑ Non-Storm Water Discharge Controls: \$9M
- ❑ Institutional Control Program: \$8M to \$9M
- ❑ Public Information and Participation Program: \$4M to \$5M
- ❑ Sub-Regional Structural BMP Program: \$10M to \$15M
- ❑ Regional Structural BMP Program: \$22M

ES-4.0 Implementation Schedule

The dry-weather implementation will be carried out in one phase and the wet-weather implementation will be carried out in four phases.

- ❖ Proposed Dry-Weather TMDL Implementation Schedule
 - ❑ Low-Flow Storm Drain Diversion Program, 2004 - March 18, 2007
 - ❑ Marina Beach Water Quality Improvement Project (Increase Basin D Circulation), 2003 - December 2005
 - ❑ Marina Source Identification and Control Program, 2005 – March 18, 2007
- ❖ Proposed Wet-Weather TMDL Implementation Schedule
 - ❑ Institutional Control Program, Public Information and Participation Program, Marina Beach Water Quality Improvement Project (Sheet Flow Diversion), and Sub-Regional Structural BMP Program
 - Phase I: FY 2005 -06 – FY 2006-07
 - Phase II: FY 2007-08 – FY 2011-12
 - Phase III: FY 2012-13 – FY 2016-17
 - Phase IV: FY 2017-18 – FY 2021-22
 - ❑ Regional Structural BMP Program (will initiate investigation in Phase I)

ES-5.0 Studies and Research

The implementation strategies proposed in this plan are based on a limited understanding of bacteria sources and BMP effectiveness. Research into these and other pertinent areas may yield more efficient and cost effective solutions.

The MDRWRA have compiled a list of suggested studies and research that may be helpful over the TMDL implementation timeframe to address several areas where information is lacking or where science and technology are rapidly evolving. The suggested studies do not necessarily need to be undertaken by the MDRWRA, but could be performed by others.

In recent years, there have been several key studies on bacterial indicators in receiving waters and the affects on human health. Recent studies using DNA technology have raised the possibility that traditional bacterial indicators may not necessarily correlate as well to the presence of human pathogens.

Existing indicators are widely used because they have several advantages: economical, easy to analyze, and repeatable. They have several limitations: do not necessarily indicate underlying human pathogens and cannot identify the source (human, animal, fish). A new ideal indicator would have the economic advantages of the current indicators, correlate well with human pathogens, and identify the source. Southern California Coastal Waters Research Project (SCCWRP) is currently studying new methods of bacterial source identification. While we are waiting for an approved

method to be established, an epidemiological study can be initiated to assess the health effects of non-human bacteria and pathogens at Southern California beaches where human sources have been eliminated.

Structural BMPs are experiencing rapid growth as public agencies install more of them and vendors are developing/refining more products. While many BMPs have performance criteria available for the user, there is not a standard testing procedure so that these products can be designed and maintained.

The following is a list of the required and/or suggested studies:

- ❖ Non-Point Source Study
- ❖ Additional Optional Bacteriological Studies
 - ❑ Human Health Risk Alternative Indicators
 - ❑ Disinfection and By-Products Study
 - ❑ Fate of the Pollutant Bacteria Study
 - ❑ Marina del Rey Seasonal Variation
- ❖ BMP Studies
- ❖ Reference System Study
- ❖ Epidemiological Study For Beaches Not Impacted By Sewage Contamination
- ❖ Marina del Rey Watershed Boundary
- ❖ Other

1.1 TMDL Development History

The 1972 Clean Water Act and subsequent amendments established requirements for achieving water quality of the Nation's rivers, lakes, and water bodies. Water pollution was becoming a growing concern due to discharges from sewage treatment plants and industrial sources. It was also recognized in 1987 that stormwater runoff was also contributing to the overall decline in water quality of some water bodies. The Clean Water Act contained provisions for Total Maximum Daily Loads (TMDLs) to be developed as a way to address water quality impairments. It also contained a mechanism to categorize and list which water bodies are impaired (Section 303 (d)) based on the designated beneficial uses. A TMDL specifies the maximum amount of a pollutant that a water body can receive without harming beneficial uses and exceed the associated water quality standards.



In the current 2002 303(d) List, Marina del Rey Harbor (MdrH) – back basins (Basins D, E, and F) and Marina Beach (also commonly known as Mothers' Beach), is listed as impaired due to bacteria, metals, and toxics.

Litigation and a resulting consent decree between the United States Environmental Protection Agency (USEPA) and environmental groups have caused a legal deadline to be established for the development of the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL. Other deadlines have also been established for the Marina del Rey Harbor Metals and Toxics TMDL, which is expected to be approved by the State within a year.

1.2 Marina del Rey Watershed Responsible Agencies

The County of Los Angeles, Cities of Los Angeles and Culver City, and California Department of Transportation (Caltrans) were named the responsible jurisdictions and responsible agencies of the Marina del Rey Watershed in this TMDL. Furthermore, the County of Los Angeles was named the primary jurisdiction among the responsible agencies. The County of Los Angeles Department of Public Works (Public Works), Department of Beaches and Harbors (LACDBH), and Department of Sheriff/Harbormaster primarily represent the County in the Marina del Rey Watershed. The Marina del Rey Watershed responsible agencies (MDRWRA) are jointly responsible for achieving the Bacteria TMDL regulation compliance for the MdrH.

Even though Caltrans' goal is to participate jointly with other responsible agencies in developing a watershed-wide approach for addressing bacteria as well as other listed pollutants, Caltrans reserves the right to proceed independently to address the TMDL goals depending on the specific costs and implementation measures identified during the implementation process.

The MDRWRA first met in April 2004 with interested stakeholders such as the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), Heal the Bay, Santa Monica BayKeeper, and representatives from the Marina del Rey Lessees Association. With the interested stakeholders, the MDRWRA has created this implementation plan to achieve the TMDL regulatory compliance.

1.3 Implementation Plan Objectives

The purpose of this implementation plan is to describe implementation methods and mechanisms to achieve the TMDL regulatory compliance. The implementation strategies include three Control Programs (Public Information and Participation Program, Institutional Control Program, and Structural Best Management Practices Program) the MDRWRA will use to comply with the Bacteria TMDL. The implementation plan addresses both dry-and wet-weather compliance.

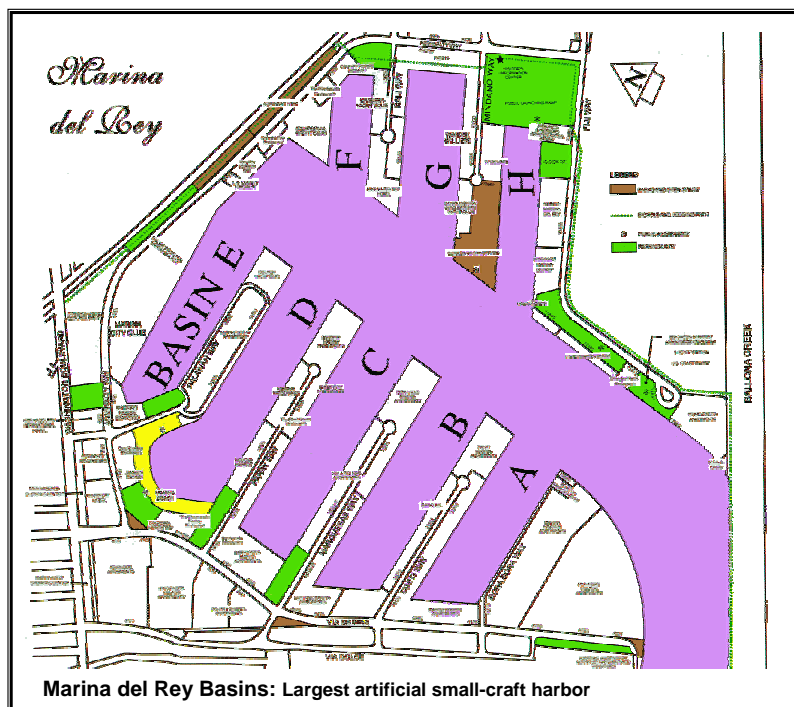
The MDRWRA is required to achieve dry-weather compliance by March 18, 2007 and wet-weather compliance no later than March 18, 2022, depending on the implementation strategy employed. In this implementation plan, the MDRWRA proposed to use a multi-purpose or an Integrated Water Resources (IWR) approach in the implementation, and the TMDL allows up to 18 years for compliance if such approach is used.

2.1 TMDL Summary

On March 18, 2004, the USEPA promulgated the TMDL for bacteria at Marina del Rey Harbor - Marina Beach and back basins (Basins D, E, and F). The TMDL requires the MDRWRA to submit a draft implementation plan to the LARWQCB by March 30, 2005, for review and a revised final implementation plan for approval by July 30, 2005.

The California Water Quality Control Plan, Los Angeles Region (Basin Plan) sets beneficial uses and water quality standards for water

bodies in the region. Marina Beach and the back basins (Basins D, E, and F) were given a REC-1 beneficial use, which is defined as recreational water activities (swimming, wading, water-skiing, skin and scuba diving) involving body contact where ingestion of water is reasonably possible. Total coliform, fecal coliform, fecal-to-total coliform ratio, enterococcus are used in the Basin Plan as bacteria indicators of the likely presence of disease-causing pathogens in marine waters. The goal of this TMDL is to reduce these bacteria indicator levels at Marina Beach and the back basins.



Section Four of the TMDL Staff Report, “Assessing Sources”, identifies the following possible sources of bacteria:

- ✓ Sanitary sewer leaks and spills
- ✓ Illicit connections of sanitary lines to the storm drain system
- ✓ Runoff from homeless encampments
- ✓ Pet waste
- ✓ Illegal discharges from recreational vehicle holding tanks
- ✓ Direct illegal discharges from boats
- ✓ Illicit discharges from private drains such as restaurants
- ✓ Swimmer “wash-off”
- ✓ Fecal matter from animals and birds
- ✓ Vegetation and food waste

Also in the TMDL Staff Report, the LARWQCB suggested three potential implementation strategies:

- ❖ Low flow diversions and other end-of-pipe structural controls
- ❖ Circulation improvement
- ❖ Non-structural or institutional controls

The USEPA has oversight authority and is required to review and approve each TMDL developed. This TMDL does not currently have an enforcement mechanism. The TMDL becomes legally enforceable when the LARWQCB incorporates it into the Los Angeles County Municipal Storm Water National Pollution Discharge Elimination System (NPDES) Permit and the Caltrans Statewide Storm Water NPDES Permit.

2.1.1 Compliance Targets and Allocations

The TMDL's Waste-Load-Allocations (WLAs) are expressed as allowable exceedance days which are the maximum number of days where sampling results at a particular compliance monitoring site can surpass the established Assembly Bill 411 health standards without violating the TMDL. The allowable exceedance days concept grew out of research, using a local reference system located near the Los Angeles and Ventura County border (Arroyo Sequit Canyon). The Reference System concept is that even a natural watershed with minimal human impact will contribute a certain base-level of bacterial loading to the receiving water body. This approach accounts for bacterial indicator contributions from non-anthropogenic sources.

The TMDL's allowable exceedance days are not straightforward; in fact, they can vary greatly depending on sampling location, sampling frequency, and time of year. Consequently, the allowable exceedance days and where they are measured will not be known until a compliance monitoring program (submitted to the LARWQCB on July 16, 2004) is approved by the LARWQCB. Nevertheless, the MDRWRA do know that both the summer and winter dry-weather WLAs must be met by March 18, 2007, whatever these allocations may be. This deadline may be extended by no more than one year if the sewer system is found to be under-capacity precluding urban runoff from being diverted to the Hyperion Treatment Plant owned and operated by City of Los Angeles. Depending on the implementation strategy employed, the MDRWRA must achieve compliance with the wet-weather WLAs within 10 or 18 years depending on whether a single-purpose engineering approach or a multi-purpose IWR approach is employed.

The TMDL's Numeric Targets are same as the AB411 health standards:

1. 30-Day Geometric Mean Limits

- d. *Total coliform density shall not exceed 1,000 /100ml.*
- e. *Fecal coliform density shall not exceed 200/100ml.*
- f. *Enterococcus density shall not exceed 35/100ml.*

2. Single Sample Limits

- c. *Total coliform density shall not exceed 10,000/ 100ml.*
- d. *Fecal coliform density shall not exceed 400/100ml.*
- e. *Enterococcus density shall not exceed 104/100ml.*

2.1.2 Compliance Monitoring

The TMDL requires the MDRWRA to create and submit a Coordinated Compliance Monitoring Plan (CMP) for LARWQCB review and approval within 120 days of the TMDL’s effective date. Over a six-month period in 2004, the MDRWRA jointly drafted the CMP. Representatives from Heal the Bay and Santa Monica BayKeeper also provided valuable input. The CMP was submitted to the LARWQCB on July 15, 2004, and has not been approved as of late October, 2005.

The CMP proposes weekly sampling at eight locations at Marina Beach and the back basins to measure compliance with the TMDL’s WLAs. Consistent with the TMDL’s requirement, two samples, one at the surface and the other at depth, will be collected at some sites. Accelerated monitoring is required at a compliance monitoring sites should at least one of the bacterial indicators be exceeded.

In addition to the compliance monitoring sites, the CMP also proposes five ambient water quality monitoring sites in the non-303(d) listed Marina del Rey Harbor Basins. The ambient monitoring sites provide a regular snapshot of the water quality with respect to bacterial indicators at these non-listed water bodies. The ambient samples are collected at the center of each basin to best characterize the general water quality. Monthly sampling at the ambient monitoring sites is proposed until the TMDL’s reopener, which is scheduled for March 18, 2008.

2.1.3 Compliance Schedule

The TMDL’s Numeric Targets must be met by:

- ❖ March 18, 2007, for dry-weather compliance
- ❖ From March 18, 2014, to March 18, 2022, for wet-weather compliance

The following is a summary of deadlines for the action items in the TMDL based on the effective date of March 18, 2004:

Date	Action	Status
July 16, 2004	Compliance Monitoring Plan	Submitted on July 15, 2004 and awaiting approval
July 16, 2004	Small Drain Study	Submitted on July 16, 2004
July 16, 2004	Beaches and Harbors Discharge Report	Submitted on July 16, 2004
Draft-March 30, 2005 Final-July 30/October 31, 2005	Implementation Plan	Submitted draft on March 30, 2005
March 18, 2007	Non-point Source Study	Will be submitted on March 18, 2007

2.2 Marina del Rey Watershed

2.2.1 Watershed Description

The Marina del Rey Watershed is comprised of five subwatersheds (see Figure 2.1 for watershed boundary), but only subwatersheds 1A, 3 and 4 are tributary directly to the impaired back basins (Basins D, E, and F). The Control Programs proposed in this implementation plan are focus in these three priority subwatersheds.



The Marina del Rey Watershed can be characterized by three main parts:

- ✓ The Harbor water area, including the docks, back basins, Marina Beach, and Oxford Retention Basin (Oxford Basin).
- ✓ The land adjacent to the Harbor back basins is the Los Angeles County unincorporated area, which includes individual parcels, streets, and other facilities.
- ✓ The land outside the Los Angeles County unincorporated area draining into the Harbor waters, including the Cities of Los Angeles and Culver City, and Caltrans right of ways.

Marina del Rey Harbor is open to the Santa Monica Bay through the Main Channel and it shares a common breakwater with Ballona Creek. The Harbor consists of the Main Channel and eight back basins (A-H). Marina Beach is located in the west end of Basin D.

Oxford Basin is situated at the north end of Marina del Rey Harbor and drains to Basin E through two slide gates and a culvert system. Oxford Basin serves as a retention basin for the surrounding watershed and the slide gates control tidal influence on its water level. County of Los Angeles Flood Control District (LACFCD) storm drain Project No. 5243¹ drains into the northeast corner of Oxford Basin and Project No. 3872 drains into the east side of Oxford Basin via Oxford Pump Plant. Project No. 3874 drains into Basin E via the Boone-Olive Pump Plant.

¹ This follows the County of Los Angeles Flood Control District's naming convention for storm drain facilities

The Small Drain Study¹ identified over 720 other smaller drainage systems draining into the Harbor. Most of these systems serve the individual parcels and mole roads between basins. The remaining drains serves the Marina del Rey's streets surrounding the basins.

2.2.2 Land Use

The Marina del Rey Watershed was developed in two general stages. The area surrounding the Harbor was developed from the late 1800's into the early 1900's and Marina del Rey was constructed in the early 1960s from the remnants of the Ballona Creek Wetlands and Estuary. Marina del Rey was subsequently developed with a variety of different uses and facilities including housing, restaurants, commercial/retail, office, and marine/boating.



The Marina del Rey Watershed is approximately 1,855 acres (2.9 square miles) in size and lies within the City of Los Angeles (53%), County unincorporated (44%), City of Culver City (2%), and Caltrans (1%). (See Figure 2.1 for jurisdictional boundary.) The predominant land uses are residential (46.6%), commercial/office (12.2%), receiving waters of MdRH (11.6%), marina facilities (9.2%), open space/recreational (4.8%), light industrial/vacant (4.7%), and educational/transportation/other (10.9%). (See Figure 2.2 for the watershed Land Use.)

¹ Marina del Rey Small Drain Study, 2004, Los Angeles County, Department of Public Works, Watershed Management Division



Figure 2.1
Marina del Rey Watershed

<p>DEPARTMENT OF PUBLIC WORKS</p>	DEPARTMENT OF PUBLIC WORKS					<p>WATERSHED PROTECTION CITY OF LOS ANGELES BUREAU OF SANITATION</p>
	RITA L. ROBINSON DIRECTOR			SHAHRAM KHARAGHANI PROGRAM MANAGER		
	FILE-LOC MS	DRAWN BY: MS	CHECKED BY: WT	DATE XX/XX/04	DATE REVISED X	



Figure 2.2
Marina del Rey Watershed Landuse

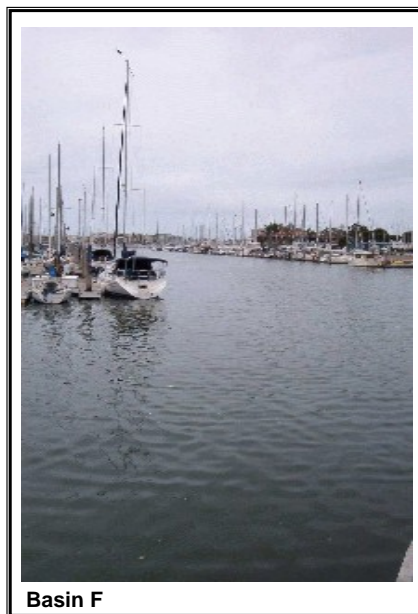
<p>DEPARTMENT OF PUBLIC WORKS</p>	DEPARTMENT OF PUBLIC WORKS					<p>WATERSHED PROTECTION CITY OF LOS ANGELES BUREAU OF SANITATION</p>
	RITA L. ROBINSON DIRECTOR			SHAHRAM KHARAGHANI PROGRAM MANAGER		
	FILE-LOC MS	DRAWN BY: MS	CHECKED BY: WT	DATE XXXX/04	DATE REVISED X	

2.2.3 Water Quality Issues

Marina del Rey has both similar and unique water quality problems compared to the rest of the Santa Monica Bay. Tidal influences, Main Channel configuration, back basin location and configuration, and discharge points all affect the Harbor’s water quality. Basins D, E, and F generally have the poorest circulation and tidal flushing. Poor water circulation is thought to influence water quality, particularly at Marina Beach.



Basin D



Basin F

Urban runoff enters the Marina del Rey Harbor water from the surrounding storm drains and culverts, Oxford Basin, streets, parks, open space, and individual parcels adjoining the back basins. The Harbor water itself has many potential sources of pollution from human activities and uses and from natural sources. Recreational activities, such as boating, fishing, wading, etc., can be significant sources of bacterial indicators and other pollution. Natural sources include fish, birds, mammals, marine life, and geomorphology.

Marina Beach is heavily used by families and children during the summer months. The beach had been closed on numerous occasions due to high bacterial indicator densities. It is currently believed that poor tidal circulation and nearby parcel runoff may be causing these high levels.

Basin E has several bacterial indicator issues depending on the season. Oxford Basin exchanges low flow urban runoff, stormwater, and tidal exchange through a culvert near the back of Basin E. The Boone-Olive Pump Plant discharges both low flow urban runoff and stormwater in the back of Basin E as well. Poor tidal circulation is also believed to play a role in elevated bacterial indicator densities.



Basin E

Basin F has similar poor tidal circulation issues and receives some urban runoff from adjoining land areas.

3.1 Iterative Adaptive Approach

The key feature of this implementation plan is establishing a process that has the flexibility to provide multiple benefits, address multiple pollutants, and have a methodology/process to adapt itself as the plan is implemented and effectiveness is evaluated. This process follows the IWR approach by using an iterative adaptive approach. This process will also establish a cost tracking system so that a cost/effectiveness/efficiency analysis can be performed for each selected implementation action. Cost/effectiveness/efficiency analysis results can be evaluated to select implementation actions with the “most bang for the buck” in subsequent iterations.



This iterative adaptive approach is characterized by several principal features:

- ✓ Baseline - Establish current conditions with existing data or new monitoring.
- ✓ Proposed possible action items - Establish performance criteria and expected results.
- ✓ Implement action - Continue current practices and perform proposed actions.
- ✓ Evaluate performance - Use compliance or source identification monitoring, BMP monitoring, etc., to evaluate progress in meeting compliance goals .
- ✓ Adapt action - If successful, do more, if not, correct action, or abandon action.
- ✓ Iterate Process - Repeat until desired results are obtained.

The dry-and wet-weather TMDL implementation will use the iterative adaptive approach. The dry-weather implementation will be carried out in one phase and the wet-weather implementation will be carried out in four phases.

- ❖ Proposed Dry-Weather TMDL Implementation Schedule
 - Low-Flow Storm Drain Diversion Program, 2004 - March 18, 2007
 - Marina Beach Water Quality Improvement Project (Increase Basin D Circulation), 2003 - December 2005
 - Marina Source Identification and Control Program, 2005 – March 18, 2007

- ❖ Proposed Wet-Weather TMDL Implementation Schedule
 - Institutional Control Program, Public Information and Participation Program, Marina Beach Water Quality Improvement Project (Sheet Flow Diversion), and Sub-Regional Structural BMP Program
 - Phase I: FY 2005 -06 – FY 2006-07
 - Phase II: FY 2007-08 – FY 2011-12
 - Phase III: FY 2012-13 – FY 2016-17
 - Phase IV: FY 2017-18 – FY 2021-22
 - Regional Structural BMP Program (will initiate investigation in Phase I)

3.2 Effectiveness Monitoring Analysis and Results

Results from the routine CMP will show how the MDRWRA have been at reducing the exceedances to those allowed in the TMDL. Results from source tracking/monitoring and BMP effectiveness monitoring will also assist each responsible agency's implementation program manager (IPM) to implement projects that will address "hot-spots". The MDRWRA will work together to produce consistent monitoring methodologies and analysis, and share their results with each other to ensure effective compliance.

3.3 Cost Tracking and Analysis

As noted above, cost is a significant factor in the iterative adaptive process. Given that the MDRWRA's resources are limited, cost is expected to be the second factor in selecting and modifying implementation actions. Unexpected excessive costs due to low BMP efficiency or maintenance difficulties may require a change in the implementation approach. Each responsible agency is encouraged to track and record costs associated with implementation measures.

Cost accounting and reporting is critical in providing timely information to IPM's. Each responsible agency will need cost information for their yearly budgeting process, long-term capital improvement program, and to assess/revise revenues. Failure to provide accurate cost accounting causes unavoidable delays in budgeting process and the resultant mitigation of bacterial levels. It will also make the iterative and adaptive process difficult since one of the considerations is cost-effectiveness.

3.4 Consistent Reporting Procedures

The MDRWRA are encouraged to use consistent reporting procedures so that each responsible agency can use data/analysis of mutual interest.

3.5 Cost/Effectiveness/Efficiency Ratio Analysis

The cost/effectiveness/efficiency analysis is a valuable tool for each IPM to decide the next step in the iterative adaptive process. The IPM may use the

cost/effectiveness/efficiency ratio to evaluate each selected implementation action and decide what the next action should be.

The most obvious example is that if two implementation actions result in equivalent effectiveness, the responsible agency should choose the least expensive one. Less clear, is when non equivalent results are obtained. In some cases, to keep implementation moving forward and improving water quality, responsible agencies may choose to implement actions that are easy and quick, even though it may be less effective.

3.6 Revising Control Programs

The iterative adaptive process is an on-going feature that allows this plan to be effective in the future. It is expected that the Control Programs listed in this plan will change over time. The flexibility built in to this plan is what is expected to make it effective. There will be logical points in time where the MDRWRA may ask the LARWQCB to re-evaluate the phases and Control Programs and provide feedback on how the MDRWRA should proceed.



4.1 General Compliance Approach

The MDRWRA considered three different compliance approaches, chose the best features from each, incorporated the iterative adaptive process, and developed the Hybrid approach. This approach is based on the compliance approach developed by the Santa Monica Bay Beaches Bacteria TMDL Jurisdictional Groups 2 and 3¹. The following three approaches were considered:

- ✓ Low Cost
- ✓ Low Risk
- ✓ Maximum Beneficial Reuse

The Low Cost approach considers actions and philosophies designed to minimize costs, and generally these are institutional controls. This approach assumes a higher level of non-compliance risk. Control Programs are structured in phases in an iterative adaptive approach, where they are evaluated for effectiveness and modified/adapted accordingly. Sub-regional control associated with this approach generally may not stress beneficial reuse unless it is the low cost option at that site. Since only a few programs are implemented at a time, the costs are lower.

The Low Risk approach considers implementing the Control Programs designed to ensure compliance with less emphasis on costs and beneficial reuse. This approach treats the most runoff volume and incorporates the institutional controls of the Low Cost approach, but substitutes regional control for the sub-regional control. Regional control consists of large-scale and costly water quality treatment plants. Oxford Basin was identified as a potential location for a regional control opportunity, if needed.

The Maximum Beneficial Reuse approach considers managing as much runoff as possible and reusing it. This approach uses the same Control Programs as the Low Risk approach, but includes additional features to beneficially reuse the treated runoff. Treated water from the Oxford Basin could be reused to irrigate the landscaping in street medians, parks, and other public and private properties vegetation. A new dedicated distribution system would be required. The cost of this approach is expected to be considerably higher than the Low Risk approach due to the additional infrastructure required to reuse the treated runoff.



¹Santa Monica Bay Beaches Bacteria Total Maximum Daily Loads Draft Implementation Plan, Jurisdiction 2 and 3, Section 3.7, March 2005

4.1.1 The Hybrid Approach

Each of the three approaches has its advantages and disadvantages. The MDRWRA evaluated each of these options, discussed the process used by the Santa Monica Bay Beaches Jurisdictional Group 2 and 3, and decided to pursue the Hybrid approach. The Hybrid approach uses the iterative adaptive process and features the following Control Programs:

- ✓ Public Information and Participation Program
- ✓ Institutional Control Program
- ✓ Structural BMPs Program

This approach combines the best features of the three and results in a better, more balanced plan because:

- ❖ Cost - The Hybrid approach acknowledges cost as a significant consideration by building in a cost/benefit/effectiveness analysis as part of the iterative adaptive approach, which allows the MDRWRA flexibility in choosing measures with varying levels of risk and cost.
- ❖ Low Risk - The Hybrid approach acknowledges risk as a significant consideration by using a multiple Control Programs to lower risk. Each of these programs accomplishes implementation through different mechanisms and provides concurrent benefits.
- ❖ Maximum Beneficial Reuse - The Hybrid approach acknowledges Maximum Beneficial Reuse as a significant consideration by incorporating reuse in sub-regional controls.

As discussed in Section 3, these three Control Programs will be implemented in four phases. The proposed actions in the three Control Programs will address multiple pollutants. The Structural BMPs Program includes the Low-Flow Storm Drain Diversion Program, the Marina Beach Water Quality Improvement Project, the Marina Source Identification and Control Program, the Sub-Regional Structural Program, and the Regional Control Program.

4.2 Public Information and Participation Program

Under the 2001 Los Angeles County Municipal Stormwater NPDES Permit, the County is required to implement a comprehensive Public Information and Participation Program (PIPP) on behalf of its 84 co-permittee cities to increase the knowledge of stormwater pollution and urban



runoff among targeted groups of Los Angeles County residents and to measurably change their polluting behaviors. The Municipal Stormwater NPDES Permit also requires the County to develop and implement outreach to ethnic communities and businesses through culturally effective methods.

The multifaceted PIPP strategy developed by the County is the result of comprehensive social marketing research and input from the County's NPDES Advisory Public Education Committee which includes municipal, environmental and non-governmental organization (NGO) stakeholders. Marina residents, recreational users and others are all exposed to the County's countywide general market campaign and/or Spanish language campaign through various forms of outreach. These efforts and related public education enhancements are outlined within the following sections. The MDRWRA recommend that all TMDL efforts be coordinated with the existing PIPP in terms of graphics, messages, and the Pollution Prevention Partner (PPP) logo. Further, the MDRWRA recommend that specific materials and strategies developed for the Marina del Rey Harbor Bacteria TMDL be implemented in a consistent manner by all jurisdictions.

Caltrans is responsible for stormwater pollution controls along the State Highways in the Marina del Rey Watershed, including Lincoln Boulevard (LA-1) and Venice Boulevard (LA-187). As part of its storm water management activities, Caltrans uses a variety of methods to educate the public about the importance of managing storm water. The general approach of Caltrans' Public Education Program is to:

- ✓ Inform the public regarding the storm water quality issues that pertain to Caltrans properties, facilities and activities; and
- ✓ Encourage public behavior changes regarding the release of potential pollutants (e.g., litter, spilled loads and oil leaks).

Caltrans' storm water outreach program consists of a variety of written materials, monthly and quarterly bulletins, a website, workshops, storm drain stenciling, anti-litter signs, a statewide Adopt-a-Highway Program, along with many local municipality partnerships. "Pathogens in Storm Drain Discharges Brochure" is an example of written materials that is most directly related to bacteria.

The Marina del Rey Watershed is in the jurisdiction of District 7 of Caltrans. In District 7, "No Dumping" and "Litter Fee" signs were installed at selected locations on highways and freeways. Warnings were stenciled at the drain inlets to prohibit discharges into drainage systems in the park-and-ride lots, rest areas, vista points, and other areas with pedestrian traffic."

4.2.1 Inter-Agency Coordination

Protecting water quality and preserving the image of the Marina as an attractive residential, tourist and recreational destination is of vital economic interest to local municipal and regulatory agencies; environmental NGOs; trade, industrial and homeowner associations; and sport and lifestyle clubs and organizations. Partnerships and increased coordination with these stakeholders would greatly increase the efficacy of the County's stormwater public information and participation campaign, allowing stakeholders to build upon existing efforts and combine resources for cost-effective outreach.

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Coordinate among the responsible agencies in outreach through Marina parks, special events (i.e. summer concert series), youth and beach programs, permitting offices, and various other points-of-service (e.g. the senior parking pass program).
- Coordinate with the California Coastal Commission on messages and integrate related public outreach and social marketing materials—also known as social marketing collateral—for its DockWalkers program and with the Santa Monica Bay Restoration Commission for its direct outreach efforts.
- Collaborate among the responsible agencies to develop bilingual stormwater point-of-service collateral for dissemination at bait and tackle shops and fishing license counters.
- Coordinate between the MDRWRA and the Marina stakeholders to communicate with their audiences through newsletters and other media and at service desks, points-of-purchase, etc.
- Consider recruiting lifeguards as stormwater spokespersons.
- Coordinate with the Westchester/LAX/Marina del Rey Chamber of Commerce, Marina del Rey Convention and Visitors Bureau, and California Restaurant

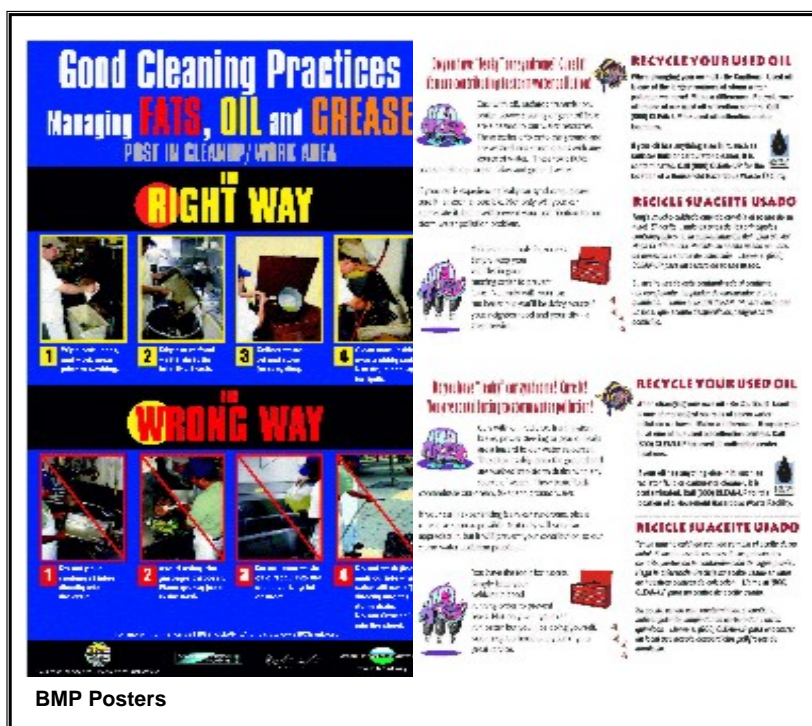


Association (CRA) to develop a business-led stormwater voluntary compliance pilot project targeting the hosing down of parking lots and driveways.

4.2.2 Industry-Specific BMP Outreach

The LARWQCB cites dry weather urban runoff and stormwater conveyed by storm drains as the primary sources of high bacteria levels in Marina del Rey’s back basin area. Within that finding, food service establishments are identified as among the primary non-point source polluters.

In June 2004, the County offered a comprehensive, industry-specific training program targeting employees who work in the food service industry within the unincorporated areas of the County. The program consisted of a partnership with the California Restaurant Association to conduct outreach to its membership, interactive workshops and ongoing reinforcement of Best Management Practices. Key elements of this training module include a PowerPoint presentation, hands-on exercises, role-playing, and other activities that impart key stormwater education messages and industry BMPs.



BMP Posters

The program’s ongoing reinforcement component, known as the Pollution Prevention Partners Program, entails a workshop follow-up package that is mailed to all attendees, an order form for additional BMP items and the incentive program package. The order form features photos of the workshop items, including BMP posters, tip cards and other program collateral. The incentive program includes pledge forms that managers and employees are asked to sign to reinforce their commitment to implementing a pollution

prevention plan and becoming a “Pollution Prevention Partner.” The pledge form is an instrumental tool for instilling a sense of responsibility within individual employees and in reinforcing their commitment to non-polluting behaviors. Managers receive a Pollution Prevention Partner window decal to be prominently displayed in their establishment. Prior to launching the incentive program, calls are placed to each of the workshop attendees to assess the number of current employees at each business. This

information is used to set pledge form goals for each establishment (every establishment is required to return pledge forms from at least 75% of their employees to be eligible for program premiums, which will be identified later).

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Coordinate with the Marina del Rey Lessee Association, Westchester/LAX/Marina del Rey Chamber of Commerce, Marina del Rey Convention and Visitors Bureau, and CRA to develop and promote on-site restaurant BMP workshops. Partners to collaborate on program premiums for workers and managers who complete BMP training or participate in the BMP sustainability program.
- Customize, if necessary, the BMP training module based on mitigating food service industry behaviors that contribute to high bacteria levels in the Marina del Rey Harbor.
- Partner with the Westchester/LAX/Marina del Rey Chamber of Commerce, CRA, Marina del Rey Convention and Visitors Bureau and local media outlets to publicly recognize restaurants that participate in Pollution Prevention Partners program.
- Highlight economic benefits of stormwater pollution prevention and TMDL compliance in business outreach.
- Consider increasing access to industry-specific BMP materials and technical support by posting resources to their respective Web sites as appropriate.
- Conduct pre- and post-training inspections to gauge program effectiveness.
- Partner with homeowner associations and the Westchester/LAX/Marina del Rey Chamber of Commerce to target service industries that may contribute to non-point stormwater pollution (i.e. pool and carpet cleaners, maid services).

4.2.3 Advertising

Paid advertising is a key component of the PIPP in reaching Los Angeles County's vast and diverse populations. Complementing the earned media exposure garnered through the County's Stormwater/Urban Runoff Pilot Programs, the *Can It!* and Spanish-language counterpart, *¡MantenLA Limpia!*, paid advertising campaign results in



absolute control over placement and message content to ensure that target audiences receive the most direct and effective behavior-changing messages with maximum exposure.

In addition, the City of Los Angeles works with local radio and television stations to advertise and make the public aware that they can help reduce pollution by disposing of trash in receptacles and that the storm drains do lead to the ocean. Additional outreach material is also made available to reach the public by working with the local advertising agencies to get free space to post educational material at bus stops and billboards.

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Identify media outlets that reach targeted populations within Marina del Rey Watershed.
- Develop a targeted media campaign.
- Consider exploring media partnerships, cross-promotions and nontraditional media tools (i.e. trash can wraps through Beaches and Harbors, out-of-home advertising on Marina del Rey Coast link Water Shuttle).

4.2.4 Media Relations

Media relations is a key tactic in the implementation of the PIPP. Working with media outlets to communicate relevant, newsworthy pollution prevention messages allows the County to maximize its outreach through a cost-effective and credible source. Elements of the County's media relations plan include media kits, Video News Releases (VNRs), a database of current media contacts, B-roll footage of pollution-causing and -prevention behaviors, spokesperson training, trash net tours, and media events.



Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Identify additional media mix for outreach, such as newsletters, bulletins and local access cable.
- Provide media covering the Marina and nearby areas with relevant stories and campaign resources that accurately depict campaign messages.



4.2.5 Pollutant-Specific Outreach



Used Oil Recycling Center in the Marina

Pet waste is a well-recognized cause of indicator bacteria. In addition to media messages that specifically address proper pet waste disposal, the County provides tip cards and pet waste bags to co-permittees and to the general public through a variety of special events. Other non-polluting behaviors reinforced by County public outreach efforts include proper disposal of cigarette butts, used motor oil recycling, SmartGardening, and the proper disposal of Household Hazardous Waste and E-waste.

Marina del Rey has a self-service tank operated by the County for the disposal of uncontaminated used oil. The City of Los Angeles operates a permanent Household Hazardous Waste and E-Waste collection center at the Hyperion Treatment Plant in Playa del Rey that is accessible to Marina residents.

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Partner with Permittee's Stormwater Program to expand existing pet waste outreach to pet owners, pet caretakers (dog walkers, pet sitters, etc.) and pet service and supply operations that service the Marina.
- Update campaign materials to target Marina-specific TMDLs.
- Partner with the Marina del Rey stakeholders and businesses for placement of campaign materials at locations that relate to TMDLs (restaurants, boating supply facilities and boat-owners associations, etc.)
- Enhance outreach efforts related to used oil recycling by partnering with other agencies and organizations (e.g. LACDBH, yacht clubs, the



A Household Hazardous Waste Event

Westchester/LAX/Marina Chamber of Commerce, organizers of the annual boat show) recommended.

- Promote Countywide programs for smart gardening, Household Hazardous Waste and E-waste, and recycling efforts.

4.2.6 School Outreach

The County's environmental education programs reach approximately 375,000 students attending public and private elementary and secondary schools within the County each year. Programs include assembly presentations, service-learning projects, teacher development workshops, technical assistance, and competitions.

Additionally, the City of Los Angeles' Stormwater Public Education Program has determined that the most effective method to outreach to elementary school-aged youth is while they are at school. Consequently, the City designed a four-pronged solution:

1. Inform students directly with an easy to understand stormwater message.
2. Involve people who influence children in disseminating the message.
3. Reinforce and expand the stormwater message with youths on different occasions.
4. Engage students in actively accomplishing the goals of the stormwater message within the community.



Since the program's inception in 1994, well over half a million Los Angeles Unified School District (LAUSD) students have participated in an assembly program sponsored by the Stormwater Program.

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Make targeted phone calls to all public and private K-12 schools within the Marina del Rey Watershed to notify them of the availability of environmental education programs offered by the County of Los Angeles and City of Los Angeles, emphasizing to school administrators that these programs comply with State curriculum standards and provide opportunities to fulfill service-learning requirements.

4.2.7 Adopt-A-Highway Program

The Adopt-A-Highway program, which began in 1989, is one of the state's most prevalent examples of a successful government-volunteer partnership. Since 1989 more than 120,000 Californians have kept over 15,000 shoulder-miles of roadside clean. Participation can include removing litter, planting and establishing trees, or wildflowers, removing graffiti, controlling vegetation.

Adoptions usually span a two-mile stretch of roadside and permits are issued for five-year periods. Individuals, organizations, businesses, and city, county, state, and federal agencies can adopt sections of State highway roadside. Participants may perform the work themselves or hire a service contractor to perform the work on their behalf.

Action Items (Refer to Table 4.1 for each agency's responsibilities of each action item)

- Partner with the Westchester/LAX/Marina Chamber of Commerce and Convention and Visitors Bureau to encourage adoption of highways within the Marina del Rey Watershed.

Table 4.1 Agency Commitment and Implementation Schedule for the Public Information and Participation Program

Section Number	Study Category	Action Items	Implementation Schedule ¹	County of Los Angeles			City of Los Angeles			City of Culver City			Caltrans		
				Initiate ²	Pilot/ Test ³	Evaluate ⁴	Initiate	Pilot/ Test	Evaluate	Initiate	Pilot/ Test	Evaluate	Initiate	Pilot/ Test	Evaluate
4.2.1	Inter-Agency Coordination	Coordinate among the responsible agencies in outreach through Marina parks, special events (i.e. summer concert series), youth and beach programs, permitting offices, and various other points-of-service (i.e. the senior parking pass program).	Phase II	X			X			X					
		Coordinate with the California Coastal Commission on messages and integrate related public outreach and social marketing materials—also known as social marketing collateral—for its DockWalkers program and with the Santa Monica Bay Restoration Commission for its direct outreach efforts.	Phase II		X			X			X				
		Collaborate among the responsible agencies to develop bilingual stormwater point-of-service collateral for dissemination at bait and tackle shops and fishing license counters.	Phase II	X			X			X					
		Coordinate between the MDRWRA and the Marina stakeholders to communicate with their audiences through newsletters and other media and at service desks, points-of-purchase, etc.	Phase II	X			X			X					
		Consider recruiting lifeguards as stormwater spokespersons.	Phase II			X									
		Coordinate with the Westchester/LAX/Marina del Rey Chamber of Commerce, Marina del Rey Convention and Visitors Bureau, and California Restaurant Association (CRA) to develop a business-led stormwater voluntary compliance pilot project targeting the hosing down of parking lots and driveways.	Phase II			X			X			X			
4.2.2	Industry-Specific BMP Outreach	Coordinate with the Marina del Rey Lessee Association, Westchester/LAX/Marina del Rey Chamber of Commerce, Marina del Rey Convention and Visitors Bureau, and CRA to develop and promote on-site restaurant BMP workshops. Partners to collaborate on program premiums for workers and managers who complete BMP training or participate in the BMP sustainability program.	Phase II		X			X				X			
		Customize, if necessary, the BMP training module based on mitigating food service industry behaviors that contribute to high bacteria levels in the Marina del Rey Harbor.	Phase II		X			X				X			
		Partner with the Westchester/LAX/Marina del Rey Chamber of Commerce, CRA, Marina del Rey Convention and Visitors Bureau and local media outlets to publicly recognize restaurants that participate in Pollution Prevention Partners program.	Phase II		X			X				X			
		Highlight economic benefits of stormwater pollution prevention and TMDL compliance in business outreach.	Phase II			X			X			X			
		Consider increasing access to industry-specific BMP materials and technical support by posting resources to their respective Web sites as appropriate.	Phase II			X			X			X			
		Conduct pre- and post-training inspections to gauge program effectiveness.	Phase II		X			X				X			
4.2.3	Advertising	Identify media outlets that reach targeted populations within Marina del Rey Watershed.	Phase I	X			X			X					
		Develop a targeted media campaign.	Phase I	X			X			X					
		Consider exploring media partnerships, cross-promotions and nontraditional media tools (i.e. trash can wraps through Beaches and Harbors, out-of-home advertising on Marina del Rey Coastlink Water Shuttle).	Phase I			X			X			X			
4.2.4	Media Relations	Identify additional media mix for outreach, such as newsletters, bulletins and local access cable.	Phase I	X			X			X					
		Provide media covering the Marina and nearby areas with relevant stories and campaign resources that accurately depict campaign messages.	Phase I			X			X			X			
4.2.5	Pollutant-Specific Outreach	Partner with Permittee's Stormwater Program to expand existing pet waste outreach to pet owners, pet caretakers (dog walkers, pet sitters, etc.) and pet service and supply operations that service the Marina.	Phase II	X			X			X					
		Update campaign materials to target Marina-specific TMDLs.	Phase I	X			X			X					
		Partner with the Marina del Rey stakeholders and businesses for placement of campaign materials at locations that relate to TMDLs (restaurants, boating supply facilities and boat-owners associations, etc.)	Phase I		X			X			X				
		Enhance outreach efforts related to used oil recycling by partnering with other agencies and organizations (e.g. LACDBH, yacht clubs, the Westchester/LAX/Marina Chamber of Commerce, organizers of the annual boat show) recommended.	Phase I		X			X			X				
4.2.6	School Outreach	Promote Countywide programs for smart gardening, Household Hazardous Waste and E-waste, and recycling efforts.	Phase I	X			X			X					
		Make targeted phone calls to all public and private K-12 schools within the Marina del Rey Watershed to notify them of the availability of environmental education programs offered by the County of Los Angeles and City of Los Angeles, emphasizing to school administrators that these programs comply with State curriculum standards and provide opportunities to fulfill service-learning requirements.	Phase I	X			X								
4.2.7	Adopt-A-Highway Program	Partner with the Westchester/LAX/Marina Chamber of Commerce and Convention and Visitors Bureau to encourage adoption of highways within the Marina del Rey Watershed.	Phase I											X	

Notes:

1. Implementation schedule:

Phase I - FY 2005-06 – FY 2006-07

Phase II - FY 2007-08 – FY 2011-12

Phase III - FY 2012-13 – FY 2016-17

Phase IV - FY2017-18 - FY 2021-22

2. Initiate - The MDRWRA will immediately take action to initiate the program or project. While not all programs or projects will be ready at the beginning of implementation, the commitment to full implementation of the project or program exists and will be actively pursued.

3. Pilot/Test - The MDRWRA will take action to pilot the program or actions and evaluate the success. This pilot/test will last a finite amount of time at which an analysis will occur to determine if the program or project may remain or spread to the entire watershed.

4. Evaluate - The JG/agency will consider the viability of the program or project. No further action may be taken. The evaluation will include cost/benefit analysis, constructability reviews, program implementation assessment, etc. to determine if a project is ready to be piloted or implemented. A further project may or may not arise after the evaluation is complete.

Not applicable to the agency

4.3 Institutional Control Program

Institutional control measures are non-structural Best Management Practices designed to prevent or minimize pollutants of concern from entering urban runoff and stormwater and ending up in the Marina del Rey Harbor water.

These measures typically involve transforming/modifying behaviors or practices through regulations, programs, and public outreach. They are implemented by improving management of storm drain systems, sanitary systems, street maintenance activities, recreational and public facilities, public parking facilities, boating activities, industrial and commercial facilities, illicit connections and discharges, development planning activities, and so on. The public outreach component is discussed separately in Section 4.2.

This section discusses these systems, activities, and facilities within the Marina del Rey Watershed. Each of the following sub-sections concludes with proposed actions that the MDRWRA will consider implementing in an effort to meet the objectives of reducing bacteria indicator levels.

It should be noted that the proposed actions suggested in this section are specifically tailored for the Marina del Rey Watershed and may not be appropriate for other watersheds due to different characteristics, issues, pollutants of concern, and responsible agencies involvement.

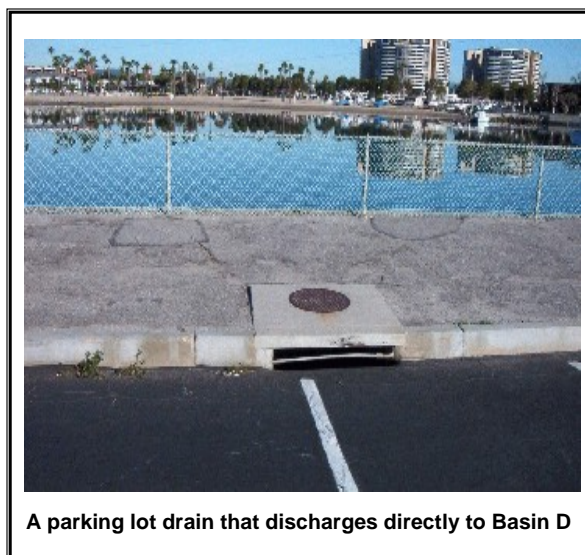
4.3.1 Storm Drain System Management

The storm drain system is a potential source of pollutants contributing contaminants to the Marina del Rey Harbor water. Enhanced storm drain system maintenance and cleanout may reduce pollutant loading.

Within the watershed, storm drain systems carry urban runoff and stormwater from the upper portion of the watershed into the back basins. These storm drains tributary to the back basins can be broken down into two primary systems:

- ✓ Major storm drains
- ✓ Parcel drains/Small drains

The Small Drain Study¹ conducted by Public Works looked at all the major storm drains and concluded that the Cities of Los Angeles and Culver City do not own any



¹ Marina del Rey Small Drain Study, 2004, Los Angeles County, Department of Public Works, Watershed Management Division

outlets that drain directly to the back basins. Furthermore, as of the submittal of this study, Caltrans does not appear to have drains that discharge directly into the Marina del Rey Harbor. The LACFCD owns 20 storm drain outlets that flow into the Marina del Rey Harbor and two storm drain inlets that flow into the Oxford Basin. Currently, there are four other storm drain outlets that flow to the Marina del Rey Harbor which are pending ownership identification. LACDBH owns approximately 700 parcel drains outlets that flow into the Marina del Rey Harbor, which are primarily from both the privately-leased and the publicly-operated parcel sites.

Table 4.2 below, lists the major storm drain outlets that discharge into the impaired back basins (Basins D, E, and F). There are approximately 264 catch basins associated with these systems.

Table 4.2 Storm Drain Outlets that Discharge to the Impaired Back Basins

Name of the Outlet	Point of Discharge
Outlet No. 7	Basin D
Outlet No. 10	Basin E
Outlet No. 11	Basin E
Outlet No. 12	Basin E
Outlet No. 13	Basin E
Outlet No. 28	Basin E
Outlet No. 16	Basin F
Outlet No. 29	Basin F

There are approximately 166 parcel drains within the perimeter promenade areas that outlet through the seawall and discharge into the back basins.

Action Items (Refer to Table 4.3 for each agency’s responsibilities of each action item)

- Identify high trash generating areas within the three priority subwatersheds (1A, 3, & 4). Retrofit all Priority catch basins to reduce or eliminate trash from entering storm drain system.
- Evaluate catch basin insert/screen retrofit implementation schedule, and develop adequate maintenance program and schedules for the retrofitted catch basins.
- Continue the existing emergency response practices regarding spills, accidents, and clean-up procedures.
- Assess the need for a maintenance and inspection program for lessee connections and discharges into the storm drain system.

4.3.2 Proper Pet Waste Disposal

Pet fecal matter laying on the ground and streets may contribute to elevated bacterial indicator densities when it washes into storm drains or straight to the Marina del Rey Harbor. It is believed the most common source of fecal matter is from dogs. Typically, dog owners walk their dogs along residential streets, in public parks, and sometimes in open areas at schools.

Within the watershed, there are four parks (Aubrey E. Austin Jr. Park, Fiji Park, Burton W. Chace Park and Admiralty Park) all owned and operated by LACDBH. Burton Chace Park is the only park that has a designated dog run. Dog owners utilize these parks and the surrounding residential neighborhoods to walk their pets.

Action Items (Refer to Table 4.3 for each agency’s responsibilities of each action item)

- Assess the existing pet waste programs within each agency's jurisdiction. Enhance measures (e.g. signs in public parks, provide doggie waste bags and receptacles), where needed.
- Analyze current "pooper-scooper" ordinances within the watershed. If deemed in need of modifications/revisions, assist in measures to possibly make amendments. Promote the "pooper-scooper" ordinance through various outreach venues to dog owners.
- Consider dog restriction at problematic areas and establish more doggie parks if deemed necessary and feasible.



People walking their dog in the Admiralty Park

4.3.3 Sanitary Sewer Management Program

Sewer system leakage or breakage can be a source of high bacteria discharge to the storm drain system and directly into the back basins. Sewage leaks can occur through the pipe joints and manholes. Untreated sewage contains high levels of fecal and enterococcus coliform bacteria and viruses.

Within the watershed, the sewer system is owned and maintained by the Marina Sewer Maintenance District (MSMD) and the Cities of Culver City and Los Angeles. The MSMD’s sewer lines serve the unincorporated areas that surround each of the back basins and Marina Beach. The flow in these sewer lines is either by gravity or by pumping to a nearby City of Los Angeles’ sewer trunk line and then to Hyperion Treatment Plant. Culver City operates and maintains a few sewer lines for a small strip of the residential areas in the eastern portion of the upper watershed, and these sewer lines also pump to the nearby City of Los Angeles’s sewer trunk lines. The City of Los

Angeles operates and maintains sewer lines for the residential areas in the northern and western portions of the watershed. In addition, the City of Los Angeles has completed a comprehensive assessment of the condition of all the secondary sewer lines and portions of the Venice areas are scheduled to be rehabilitated by the end of 2005.

To eliminate illegal connections and reduce the risk of future sewer spills during rainstorms, the City of Los Angeles conducted dye or smoke tests to verify whether or not there are any illegal connections from private properties connected to the City of Los Angeles' sewer system that should be connected to the City of Los Angeles' storm drain system. If storm drain connections to the City of Los Angeles' sewer system are found, private owners are notified to bring their property into proper compliance by disconnecting these drainage pipes and properly connecting them to the City of Los Angeles' storm drain system.

To assess the extent to which leaking sewage infrastructure may impact receiving water quality in the area of Marina Beach, the structural integrity of sewage lines in the area will be inspected by using a closed-circuit television (CCTV) camera in Task 2 of the Non-Point Source Study.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Study each agency's sewer maintenance history including their inspection and cleaning programs, emergency response procedures, and identify problem areas with leakages, overflows, or blockages. If necessary, the study would include recommendations to enhance the agency's sewer maintenance program to prevent future leakages, overflows, or blockages.
- Analyze the existing sewer system and determine if there is adequate capacity to serve the existing flows and the anticipated future flows.
- Evaluate the County's existing sewer lining programs and determine its effectiveness at eliminating infiltration and inflow. If necessary, make recommendations to reduce infiltration and inflow.
- Conduct a CCTV camera investigation to look for cracks, tree roots, sedimentation, and other evidence of integrity problems in sewer lines adjacent to Marina Beach. Where the CCTV investigation indicates problems further investigations may be conducted to determine the potential impact on the receiving waters at Marina Beach. (Task 2 of the Non-Point Source Study).

4.3.4 Illicit Connections/Illicit Discharges

Illicit connections and illicit discharges may impact stormwater quality through the release of industrial, commercial, residential, agricultural, sanitary, and other waste into the storm drain system which could increase bacteria indicator levels. The Municipal Stormwater NPDES Permit requires the identification and elimination of illicit connections and illicit discharges entering into the storm drain system. The Permit exempts certain discharges that do not constitute significant pollutants from the prohibition.



Under the 2001 Los Angeles County Municipal Stormwater NPDES Permit, the Permittees in the watershed collect illicit connection and illicit discharge information to identify and eliminate these discharges from entering into the storm drain system. This information also assists in properly permitting and/or eliminating these discharges. The Permittees submit their illicit connection and discharge information to the Principal Permittee, LACFCD. The Principal Permittee then uses this information to evaluate the patterns and trends to identify priority areas for elimination of illicit connection and illicit discharge.

Based on both the 2002-2003 and the 2003-2004 Los Angeles County Illicit Discharges and Illicit Connection Trends and Patterns Evaluation Reports, most of the illicit discharges and suspected illicit connections occurred in “High Density Single Family Residential” and “Retail/Commercial” land use categories. No incidents of illicit discharges and suspected illicit connections were reported in the Marina del Rey Watershed within a two-year period.

Action Items (Refer to Table 4.3 for each agency’s responsibilities of each action item)

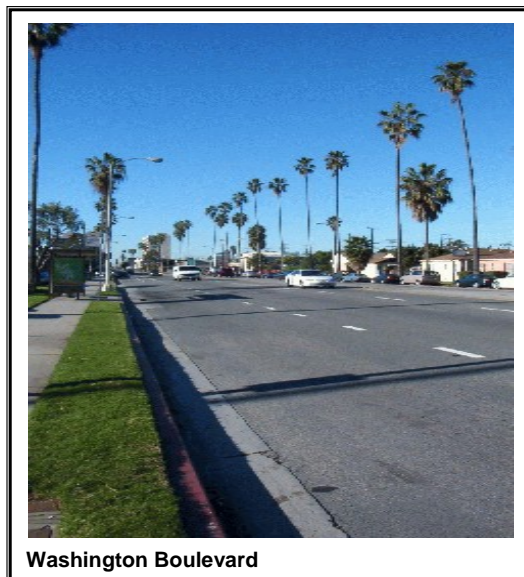
- Research feasibility of developing an inter agency task force to ensure agency cooperation in the reduction and/or elimination of illegal and illicit connections and discharges.

4.3.5 Street Infrastructure Management

Street infrastructure provides the main path for pollutants entering the storm drain system. Trash, sediment, oil and grease, bacteria, metals, and organics are washed from the adjoining properties into the streets. The same pollution is deposited directly on the streets from vehicles and trash receptacle spills.

Streets are kept clean by street sweeping programs and placing trash receptacles at bus stops and along corridors where there is a high foot trafficked area. Trash cans encourage the public to dispose of their trash in a responsible manner.

The watershed contains a wide variety of different street configurations. Typical types include major arterials, secondary streets, local/residential streets, alleys, and mole roads. The size, geometry, and configuration vary considerably. Major arterials and secondary streets may have decorative medians and street edges may have different treatment (curb and gutter, roll curb, none).



Streets are swept on a regular basis that varies by each responsible agency. There are different types of sweepers in service and the type of material picked up depends on the type of equipment used. Broom-type street sweepers generally pick up trash and small debris while the vacuum-type of street sweeper can also pick up sediment and fine particles.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Consider increasing street sweeping in high traffic area.
- Review the trash pick-up schedule with respect to the street sweeping schedule. Coordinate the street sweeping to occur within the "next day" of the trash pick-up services. Coordinate with Law Enforcement to enforce no parking during street sweeping days, if needed.
- Investigate maintenance routines for public alleys, within the watershed, for effectiveness and suggest enhancement, if needed.

4.3.6 Recreational and Other Public Facilities Management

Maintenance practices and operation activities at parks and recreational facilities and other public facilities have the potential to contribute pollutants to the storm drain system. Public facilities include certain public vehicle maintenance and/or material storage facilities/corporation yards.

The watershed has four parks (Burton W. Chace, Admiralty, Fiji, and Aubrey E. Austin, Jr. Parks) and Marina Beach owned and operated by LACDBH. The parks are heavily used by the public, especially on the weekends. These facilities have on-going maintenance and cleaning programs to keep them enjoyable for the public. The lawn and green areas require irrigation, fertilization, and routine care. Walkways and hardscape areas require cleaning and trash collection. At two of these facilities, there are catering areas and barbecue pits for public use. All of these activities may contribute bacterial indicators and other pollutants to the Marina.



Admiralty Park

Within the Marina, several public agencies have facilities including a shared LACDBH and Sheriff facility, a LACDBH maintenance yard, and a County of Los Angeles Fire Department building. These facilities have fleet vehicle and watercraft maintenance operations and various materials storage. These operations may also contribute bacterial indicators and other pollutants to the Marina del Rey Harbor waters.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Continue the current pollution prevention program.
- Evaluate the effectiveness and maintenance of the current bird deterrent devices present to reduce the presence of birds (decrease bird droppings) at parks, Mothers Beach, etc. In addition, evaluate the need for additional devices and consider a pilot study to install additional bird deterrent devices based on the evaluation.
- Evaluate placing signage and creating public informational brochures to discourage bird feeding in public areas.
- Evaluate different types of trash receptacles available and consider a replacement/retrofit program to reduce trash from being blown and/or leaking into the waterways.

4.3.7 Public Parking Facilities Management

Trash, debris, oil and grease build-up accumulates in parking lots and then is washed off into the storm drain system or directly into receiving waters. Currently, the Municipal Stormwater NPDES Permit requires that all Permittee owned parking lots with a surface area of 5,000 square feet or more, or with 25 or more parking spaces exposed to stormwater have a parking facilities management plan.

Within the watershed, LACDBH owns and operates eleven open area public parking lots. Of these public parking lots, four of them discharge directly into the back basins. Three out of these four public parking lots will be redeveloped within the next five years and appropriate BMPs will be incorporated. The fourth public parking lot (Lot UR) is being used by a library located at the back of Basin F. In addition, there are two parking lots located at a LACDBH administration building and at the Burton W. Chace Park used by LACDBH staff.

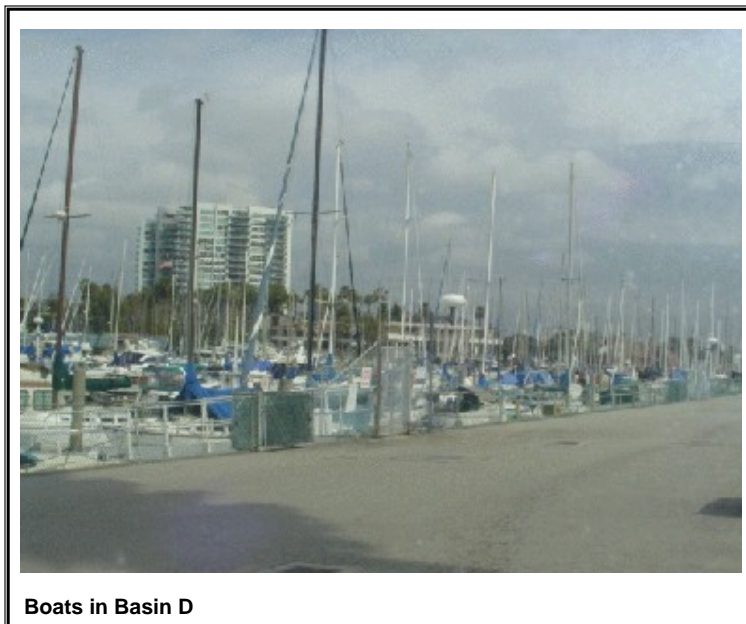


Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Evaluate the need to increase maintenance of parking lots adjacent to Back Basins. Evaluate installing anti-bird devices on light standards to reduce bird droppings. Identify "hot spot" parking lots that have bird-dropping problem. Consider a pilot study to install anti-bird devices on light standards at the "hot spot" parking lots. Post signage at parking lots stating "no dumping/littering", if needed. (Based on the result of the Non-Point Source Study.)
- Evaluate the current level of Recreational Vehicle (RV) parking and usage.
- Consult local law-enforcement regarding increasing prohibition of overnight RV parking.

4.3.8 Boating Facilities Management

Recreational and commercial boating activities at Marina del Rey Harbor are a potential source contribution of bacterial indicators and pollutants. These activities include boat cleaning, boat waste disposal, boat pad launching, boat fueling, charter boat cruises (for fishing and entertainment), trash collection (for boaters and liveboards), boat yards (for repair and maintenance), and boat shuttles.



The MdRH has over 6,000 small crafts using its facilities. Many boats are moored long term at slips and many come and go at different times. There is also a transient boating population that uses the MdRH for refueling, supplies, and maintenance, and then moves on to their next destination. It is thought that some boaters may illegally dump their sewage and bilge water in the Marina del Rey Harbor waters. While this is difficult to prove and enforce, it remains a potential source of increased bacteria levels. Pump out stations used by boats to discharge their sewage within the Marina may be another potential source of bacteria.

The extent to which leaking boat holding tanks or illicit discharge of sewage from boats may impact the Marina del Rey Harbor receiving water quality will be assessed in Task 3 of the Non-Point Source Study. A monitoring study will be conducted to investigate the illicit boat discharge and the investigation will be carried out in Basin D, E, and F in and around the recreational and commercial boats in these areas. It is anticipated that several surveys will be conducted in and around the boats in Basins D, E, and F. The survey will likely be conducted at night when illicit discharge is most likely to occur.

Currently, the Santa Monica Bay Restoration Foundation's Boater Education Program, in conjunction with the California Coastal Commission, has launched various outreach and education programs tailored specifically to reach boat owners/operators and dock-users regarding proper boating practices and maintenance activities. Specific programs include Bilge Pad Exchange program, Dockwalker Program, in-water hull cleaning certification program, Clean Marina Recognition program, Clean Marina Guidebook, California Clean Boating Network's quarterly newsletter ("The Changing Tide"). Some of these programs are currently un-funded or have very limited funding.

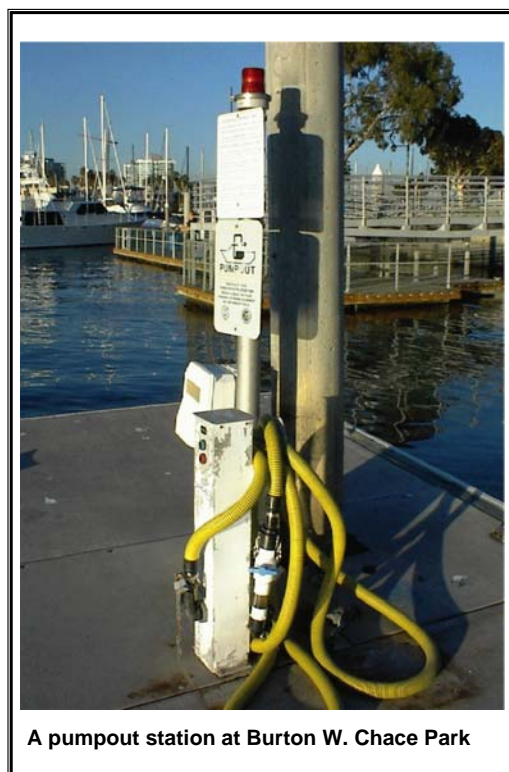
Collectively, these and other existing programs help accomplish the following objectives:

- ✓ Enhance the capture and recycling of used oil from boats through the use of oil-absorbing bilge pads.
- ✓ Provide active outreach and education to boaters about illegal dumping and proper boat hull cleaning, boat owner painting, outboard motor cleaning and/or purging of saltwater, methods for liquid food waste disposal, boat launching at launch pads, disposal methods of cleaning agents for boat cleaning and marine accessory cleaning (trailers, motors, bait tanks), etc. in Marina del Rey.
- ✓ Provide a BMP manual for the use of individual lessee and dockmasters describing proper boat and dock maintenance and cleanliness.

Implementation of the following action items is necessary to help fill the potential gaps in outreach to boaters and relevant BMPs.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Coordinate with groups, such as the Coastal Commission's Dockwalker Program and the Santa Monica Bay Restoration Foundation's Clean Boating Network, that conduct public outreach to boaters about illegal dumping and/or proper boat hull cleaning.
- Evaluate, recommend and implement improvements, if needed, for cleaning practices of public docks, slips, and handrails.
- Investigate existing BMP manuals prepared by the above educational and outreach agencies, for the use of individual lessee and dockmasters describing proper boat and dock area maintenance and cleanliness. Work with these agencies on distribution of these manuals.
- Study the existence of liveaboards and determine the need of public education and/or the creation and enforcement of an inspection program (e.g dye tabs) of holding tanks and proper disposal practices.
- Investigate the current practices of pump out stations within the Marina and recommend improvements, if needed.



4.3.9 Development Planning

Land development can significantly alter the natural drainage patterns and contribute to polluted stormwater runoff. Runoff picks up pollutants as it flows over the ground or paved areas and carries these pollutants into the storm drain system.

As noted in Section 2, much of the watershed is developed with the exception of some of the parcels in the Marina. The remainder of the watershed is expected to follow each responsible agency's current General Plan for redevelopment. The Marina has its own long-term redevelopment plan.

Currently, LACDBH is in the process of renegotiating many of the Marina del Rey parcel leases. Consequently, a wave of renovation and redevelopment is on the horizon. Most of the Marina properties were developed more than forty years ago and reflect the planning and construction methods of that time. LACDBH and its consultants have prepared a Marina del Rey Asset Management Strategy that provides a framework for both short-term and long-term leasing and development issues, encourages redevelopment while ensuring quality maintenance of current properties, and creates a structure for the better integration of recreational and commercial/residential areas. With limited public space in Marina del Rey, LACDBH is pursuing a strategy for increased boater amenities through the redevelopment process. While the majority of the Marina leases will expire around 2020, the lease renegotiation, extension, and/or new lease process has already begun for many of these parcels.

Within the watershed, the anticipated redevelopment offers an opportunity to incorporate new practices and methods for treating and handling low flows and stormwater runoff. Existing practices, designs, and requirements can be modified and changed to manage water on-site and reduce the pollutant loading to on-site drainage systems and the Marina waters.

New development in Marina del Rey, which is permitted by County of Los Angeles Department of Public Works, must meet current Standard Urban Stormwater Mitigation Plan (SUSMP) requirements. Through this process, in consultation with the LACDBH, redevelopment projects are required to use appropriate post-construction Best Management Practices that help to minimize impacts from stormwater and urban runoff into the harbor.

Similarly, new development within the Marina del Rey Watershed incorporated area, which is permitted by City of Los Angeles Department of Public Works, must meet current SUSMP requirements. Through this process, redevelopment projects are required to use appropriate post-construction Best Management Practices (BMPs) that help to minimize impacts from stormwater and urban runoff into the harbor by utilizing the Low Impact Development (LID) approach.

To support this effort, the City prepared the *Development Best Management Practices Handbook – Part A: Planning Activities*, a handbook to guide private developers and contractors in the selection, design, and application of urban runoff BMPs (City of Los Angeles, 2002). City plan checking, engineering, and inspection staff has been trained in the requirements for construction activities. These requirements also apply to public projects. The City has a post development activity inspection program in place to monitor compliance with these requirements.

Action Items (Refer to Table 4.3 for each agency’s responsibilities of each action item)

- As required under the current MS4 Permit, continue to diligently implement the existing post construction BMP requirements.

4.3.10 Industrial/Commercial Facilities Control Program

Industrial/commercial facilities can be critical sources of pollutants in stormwater.

The watershed has 12.2% of retail, commercial, and general office land use. Some of these retail and commercial facilities include restaurants, shopping centers, hotels, yacht clubs, boater support services, dry-dock storage, and auto repair/dealers. These facilities can contribute to increased bacterial indicator densities from their cleaning practices and operations. Restaurants are inspected under the existing Municipal Stormwater NPDES Permit Program.

The TMDL notes that currently there are seven individually permitted industrial/commercial facilities. These permits include the constituents of concern, allowable discharge concentrations, and other restrictions. These permitted discharges can have effects on downstream water quality, raising bacteria indicator levels at Marina Beach and the back basins.

The MDRWRA recommend that the LARWQCB re-evaluates its constituents of concern for existing discharge permits, and consider adding bacterial indicator densities (and other constituents of concern for future TMDLs) to assist the MDRWRA in meeting the TMDL requirements.

Action Items (Refer to Table 4.3 for each agency’s responsibilities of each action item)

- Recommend the LARWQCB to consider amending the point discharge permit’s constituents requirements to include bacteria indicators and those listed in the 303(d) list for the which TMDL will be developed in the near future.

4.3.11 Code and Ordinance Review Program

All public agencies have various codes and ordinances pertaining to stormwater runoff and building development. These codes and ordinances regulate stormwater discharges and building development practices and affect how both low flow and stormwater runoff are managed.

Currently, most agencies in the watershed require building gutter downspouts to be connected to on-site drainage or to be directed away from buildings. They also have standard details and practices and/or building codes to handle on-site drainage for single lot residential, multi-housing, and commercial developments. Public streets and highways are also designed with similar criteria to get water off the roadway and into ditches, channels, and pipes efficiently.



A roof drain routed to the landscape planters

Changes in these codes, ordinances, and practices may allow developers and government agencies to manage low flow and stormwater runoff in a better manner.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Evaluate the impacts of the County and City ordinances requiring down spouts from rooftops to discharge into landscape planters, swales, dry wells, and cisterns.

4.3.12 Special/Holiday Events

Special and holiday events can be reasonably expected to generate substantial quantities of trash, litter, and liquid wastes.

Special and holiday events occur often within the watershed. Some of these special events include annual boat shows, farmers markets, canoe\boat races (in the Basins), 5K and 10K races, public radio outdoor events, community public\outdoor fundraisers, concerts, weddings, BBQ's, school trips to the Marina, etc. Holiday events include Christmas\holiday boat parades and\or street parades.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)



- Evaluate the existing BMP requirements for special/holiday events and suggest enhancement, if needed.

4.3.13 Business Improvement Districts

Business Improvement Districts (BIDs) provide services, activities and programs to a geographically defined area. Services may include advertising, routine cleaning and maintenance, and holiday decorations. This program measures target business with outreach programs through the BIDs and encourages businesses to form BIDs. Businesses will be provided with information about trash management, bacteria reducing BMPs, and runoff reduction techniques such as improving landscaping.



A Restaurant next to Basin E

Currently the City of Los Angeles' stormwater program currently has four BIDs in the downtown Los Angeles area. These BIDs have partnered to (1) establish a relationship with local businesses, (2) provide an information loop for businesses, and (3) disseminate educational information to local businesses. In addition, many of these BIDs have included routine sweeping and trash pick ups as part of their commitment to develop and retain both new and existing businesses, as well as to encourage tourism or increase and established customer base. Efforts such as these are expected to focus on problematic areas, which produce high amounts of bacteria.

Action Items (Refer to Table 4.3 for each agency's responsibilities of each action item)

- Investigate the potential of forming Business Improvement District's with groups of commercial, restaurants, and retail businesses. (see Figure 4.1 for potential Business Improvement District areas).



Figure 4.1
Areas Considered for Business Improvement Districts

<p>DEPARTMENT OF PUBLIC WORKS</p>	DEPARTMENT OF PUBLIC WORKS				<p>WATERSHED PROTECTION CITY OF LOS ANGELES BUREAU OF SANITATION</p>
	RITAL ROBINSON DIRECTOR		SHAHRAM KHARAGHANI PROGRAM MANAGER		
FILE-LOC	DRAWN BY:	CHECKED BY:	DATE	DATE REVISED	This map shall not be copied or reproduced, all or any part thereof, whether for distribution or resale, without the proper written permission of the Dept. of Public Works, City of Los Angeles <small>Thomas Bros Data reproduced with permission granted by THOMAS BROS DATA</small>
MS	MS	WT	XX/XX/04	X	

Table 4.3 Agency Responsibilities, Ratings of Potential Effectiveness, and Implementation schedule for the Institutional Solutions Action Items

Section Number	Institutional Control	Action Items	Potential Effectiveness ¹			Initiate Planning ²	Initiate Implementation ^{1/2}	County of Los Angeles			City of Los Angeles			City of Culver City			Caltrans		
			Low	Medium	High			Initiate ³	Pilot/Test ⁴	Evaluate ⁵	Initiate	Pilot/Test	Evaluate	Initiate	Pilot/Test	Evaluate	Initiate	Pilot/Test	Evaluate
4.3.1	Storm Drain System Management	Identify high trash generating areas within the three priority subwatersheds (1A, 3, & 4). Retrofit all Priority catch basins to reduce or eliminate trash from entering storm drain system.			X	Phase I	Phase II*	X			X			X					X
		Evaluate catch basin insert/screen retrofit implementation schedule, and develop adequate maintenance program and schedule for the retrofitted catch basins.		X		Phase I	Phase I	X			X			X					6
		Continue the existing emergency response practices regarding spills, accidents, and clean-up procedures.	X			Phase I	Phase I	X			X			X					
		Assess the need for a maintenance and inspection program for lessee connections and discharges into the storm drain system.			X	Phase III	Phase IV*		X										
4.3.2	Proper Pet Waste Disposal	Assess the existing pet waste programs within each agency's jurisdiction. Enhance measures (e.g. signs in public parks, provide doggie waste bags and receptacles), where needed.			X	Phase I	Phase II*	X			X			X					
		Analyze current "pooper-scooper" ordinances within the watershed. If deemed in need of modifications/revisions, assist in measures to possibly make amendments. Promote the "pooper-scooper" ordinance through various outreach venues to dog owners.			X	Phase I	Phase II	X			X			X					
		Consider dog restriction at problematic areas and establish more doggie parks if deemed necessary and feasible.		X		Phase III	Phase IV*	X			X			X					
4.3.3	Sanitary Sewer Management Program	Study each agency's sewer maintenance history including their inspection and cleaning programs, emergency response procedures, and identify problem areas with leakages, overflows, or blockages. If necessary, the study would include recommendations to enhance the agency's sewer maintenance program to prevent future leakages, overflows, or blockages.			X	Phase I	Phase II*	X			X			X					
		Analyze the existing sewer system and determine if there is adequate capacity to serve the existing flows and the anticipated future flows.			X	Phase I	Phase II*	X			X			X					
		Evaluate the County's existing sewer lining programs and determine its effectiveness at eliminating infiltration and inflow. If necessary, make recommendations to reduce infiltration and inflow.			X	Phase II	Phase II*	X			X			X					
		Conduct a CCTV camera investigation to look for cracks, tree roots, sedimentation, and other evidence of integrity problems in sewer lines adjacent to Mothers' Beach. Where the CCTV investigation indicates problems further investigations may be conducted to determine the potential impact on the receiving waters at Mothers' Beach. (Task 2 of the Non-Point Source Study)			X	Phase I	Phase I	X			X			X					
4.3.4	Illicit Connections/Illicit Discharges	Research feasibility of developing an inter agency task force to ensure agency cooperation in the reduction and/or elimination of illegal and illicit connections and discharges.		X		Phase II	Phase II	X			X			X			X		
4.3.5	Street Infrastructure Management	Consider increasing street sweeping in high traffic area.		X		Phase I	Phase II*		X			X			X			7	
		Review the trash pick-up schedule with respect to the street sweeping schedule. Coordinate the street sweeping to occur within the "next day" of the trash pick-up services. Coordinate with Law Enforcement to enforce no parking during street sweeping days, if needed.		X		Phase I	Phase II*	X			X			X					
		Investigate maintenance routines for public alleys, within the Watershed, for effectiveness and suggest enhancement, if needed.		X		Phase II	Phase II*	X			X			X					
4.3.6	Recreational and Other Public Facilities Management	Continue the current pollution prevention program.		X		Phase I	Phase I	X			X			X					
		Evaluate the effectiveness and maintenance of the current bird deterrent devices present to reduce the presence of birds (decrease bird droppings) at parks, Mothers Beach, etc. In addition, evaluate the need for additional devices and consider a pilot study to install additional bird deterrent devices based on the evaluation.			X	Phase I	Phase II	X											
		Evaluate placing signage and creating public informational brochures to discourage bird feeding in public areas.			X	Phase I	Phase I		X										
		Evaluate different types of trash receptacles available and consider a replacement/retrofit program to reduce trash from being blown and/or leaking into the waterways.			X	Phase I	Phase I	X											

SECTION 4 PROPOSED IMPLEMENTATION PLAN



Section Number	Institutional Control	Action Items	Potential Effectiveness ¹			Initiate Planning ²	Initiate Implementation ^{1,2}	County of Los Angeles			City of Los Angeles			City of Culver City			Caltrans				
			Low	Medium	High			Initiate ³	Pilot/Test ⁴	Evaluate ⁵	Initiate	Pilot/Test	Evaluate	Initiate	Pilot/Test	Evaluate	Initiate	Pilot/Test	Evaluate		
4.3.7	Public Parking Facilities Management	Evaluate the need to increase maintenance of parking lots adjacent to Back Basins. Evaluate installing anti-bird devices on light standards to reduce bird droppings. Identify "hot spot" parking lots that have bird-dropping problem. Consider a pilot study to install anti-bird devices on light standards at the "hot spot" parking lots. Post signage at parking lots stating "no dumping/littering", if needed. (Based on the result of the Non-Point Source Study.)			X	Phase I	Phase II*	X													
		Evaluate the current level of Recreational Vehicle (RV) parking and usage.			X	Phase II	Phase II	X					X								
		Consult local law-enforcement regarding increasing prohibition of overnight RV parking.		X		Phase III	Phase III			X			X			X					
4.3.8	Boating Facilities Management	Coordinate with groups, such as the Coastal Commission's Dockwalker Program and the Santa Monica Bay Restoration Foundation's Clean Boating Network, that conduct public outreach to boaters about illegal dumping and/or proper boat hull cleaning.			X	Phase I	Phase I	X													
		Evaluate, recommend and implement improvements, if needed, for cleaning practices of public docks, slips, and handrails.		X		Phase I	Phase II	X													
		Investigate existing BMP manuals prepared by the above educational and outreach agencies, for the use of individual lessee and dockmasters describing proper boat and dock area maintenance and cleanliness. Work with these agencies on distribution of these manuals.		X		Phase I	Phase II	X													
		Study the existence of liveaboards and determine the need of public education and/or the creation and enforcement of an inspection program (e.g dye tabs) of holding tanks and proper disposal practices.		X		Phase II	Phase III	X													
		Investigate the current practices of pump out stations within the Marina and recommend improvements, if needed.				Phase I	Phase II	X													
4.3.9	Development Planning	As required under the current MS4 Permit, continue to diligently implement the existing post construction BMPs requirements.		X		Phase I	Phase I	X			X			X							
4.3.10	Industrial/Commercial Facilities Control Program	Recommend the RWQCB to consider amending the point discharge permit's constituents requirements to include bacteria indicators and those listed in the 303(d) list for the which TMDL will be developed in the near future.			X	Phase II	Phase II	X			X			X							
4.3.11	Code and Ordinance Review Program	Evaluate the impacts of the County and City ordinances requiring down spouts from rooftops to discharge into landscape planters, swales, dry wells, and cisterns.		X		Phase II	Phase II	X			X			X							
4.3.12	Special/Holiday Events	Evaluate the existing BMP requirements for special/holiday events and suggest enhancement, if needed.		X		Phase I	Phase II*	X			X										
4.3.13	Business Improvement Districts	Investigate the potential of forming Business Improvement District's with groups of commercial, restaurants, and retail businesses.		X		Phase II	Phase III*	X			X			X							

Notes:

- * If necessary
 - 1: The ranking of the effectiveness of the each action item is based on individual agency's judgment
 - 2. Implementation schedule:
 - Phase I - FY 2005 -06 – FY 2006-07
 - Phase II - FY 2007-08 – FY 2011-17
 - Phase III - FY 2012-13 – FY 2016-17
 - Phase IV - FY2017-18 – FY 2021-22
 - 3. Initiate - The MDRWRA will immediately take action to initiate the program or project. While not all programs or projects will be ready at the beginning of implementation, the commitment to full implementation of the project or program exists and will be actively pursued.
 - 4. Pilot/Test - The MDRWRA will take action to pilot the program or actions and evaluate the success. This pilot/test will last a finite amount of time at which an analysis will occur to determine if the program or project may remain or spread to the entire watershed.
 - 5. Evaluate - The JG/agency will consider the viability of the program or project. No further action may be taken. The evaluation will include cost/benefit analysis, constructability reviews, program implementation assessment, etc. to determine if a project is ready to be piloted or implemented. A further project may or may not arise after the evaluation is complete.
 - 6. Caltrans has a inlet insert/screen retrofit pilot program per a settlement
 - 7. Caltrans completed a study for evaluating the effectiveness of their highway sweeping equipment
- Not applicable to the agency

4.4 Structural BMP Program

The Marina del Rey Watershed has unique characteristics that must be taken into consideration when developing a Structural BMP Program to improve quality and/or to reduce quantity of dry-and wet-weather runoff. Characteristics and conditions include:

- ❖ High Groundwater Table
- ❖ Tidal Influence
- ❖ History of Flooding
- ❖ Limited Publicly Owned Parcels
- ❖ Redevelopment in the Marina

High Groundwater Table

Marina del Rey is located 2.5 mile away from Venice City Beach and is linked with the Santa Monica Bay via the Main Channel. The soils conditions around the Marina are considered to be coastal sands and loamy soils, which have the highest percolation rates (infiltration capacity). However, this approach may not be feasible option, due to the high ground water table located around the Marina. Although no recent large scale studies have been done to evaluate the quality or depth of ground water, the California Department of Conservancy, Division of Mines and Geology, evaluated the Marina area and determine historically shallow ground-water levels in the Venice Quadrangle. The evaluation relied heavily on turn-of-the-century water-well logs (Mendenhall, 1905) but also included water measurements from borehole logs collected for the study. The depths to first encountered water free of piezometric influences were plotted and contoured onto a map showing depths to historically shallowest ground water (see Figure 4.2). The map was compared to similar published maps for any discrepancies (Tinsley and others, 1985; Leighton and others, 1990).

Subsequently, the results from this study show that the ground water table around the Marina has an average depth of 5 feet, but may fluctuate depending on the season and tidal influences. Therefore, projects implemented within the watershed must consider the influence of ground water as part of the design considerations. High ground water table reduces the ability of an infiltration BMP to drain properly and affects the construction of any underground structural BMPs because de-watering is required during construction.

Tidal Influence

Due to the close proximity to Basin E, the Oxford Basin and connecting drainage network systems are subject to tidal influence. The Oxford Basin is the outlet basin for the two independent storm drains, Project No. 5243 and 3872. Both the non-storm water and storm water runoff from these storm drains conveys to the Oxford Basin for a total combined drainage areas of approximately 659 acres, and the runoff from the Oxford Basin outlets to Basin E via two existing discharge culverts each fitted with

automated slide gates. Tidal water could flow into the Oxford Basin from Basin E when the two slide gates are opened, and could back flow further upstream of the two storm drains.

History of Flooding

Before construction of the Marina del Rey Harbor in 1965, the area around the Marina was a naturally occurring wetlands/marsh. Flood waters and runoff from upstream areas drained into the large undeveloped marsh area which helped form part of the estuary for the Ballona Creek Wetlands. Upon completion, the Marina Harbor area was transformed into the world's largest man-made, small-craft marina, and opened in April of 1965. However, because the natural topography of the area is a low-lying and generally flat area, a large portion of the area is susceptible to flooding. Development within and upstream of the Marina has increased the amount of runoff that flows around and into the Marina, periodically causing flooding during extreme storm conditions and unfavorable high tides.

Vicinity in the community of Venice and unincorporated community of Marina del Rey is a natural low-lying plain and has a history of flooding. Several projects have been constructed in the areas to address the flooding such as the Oxford Retention Pump Plant. Currently, Public Works is also conducting a comprehensive evaluation of the hydrologic and hydraulic conditions in the Oxford Basin area. A relief drain to alleviate the flooding problem in this low-lying area is proposed.

Limited Publicly Owned Parcels

The Marina del Rey Watershed area is made up of a very urbanized and developed area, with very little open space. Public parks, buildings, and parking lots with the responsible agencies right-of-way offer the greatest opportunity to implement on site storage and reuse projects. However, because of the highly developed area within the watershed, there is a limited amount of public land available to implement the larger scale projects that would be needed to capture and reuse runoff. Therefore, additional small scale BMPs will be needed to be implanted in series in order to meet compliance.

Redevelopment in the Marina

Primarily developed in the 1960s, Marina del Rey's original ground leases enabled the County of Los Angeles to implement its vision for the world's largest man-made small craft harbor through a series of projects including apartments, office towers and shopping centers, in addition to numerous small boat anchorages.

The County of Los Angeles Board of Supervisors approved the Marina del Rey Asset Management Strategy in 1997, which provides a framework for managing both short-term and long-term leasing and development issues, encouraging redevelopment, while at the same time ensuring quality maintenance of current properties. Since the late 1990s, roughly half of the leaseholds have proposed redevelopment plans, with some half dozen projects currently underway.



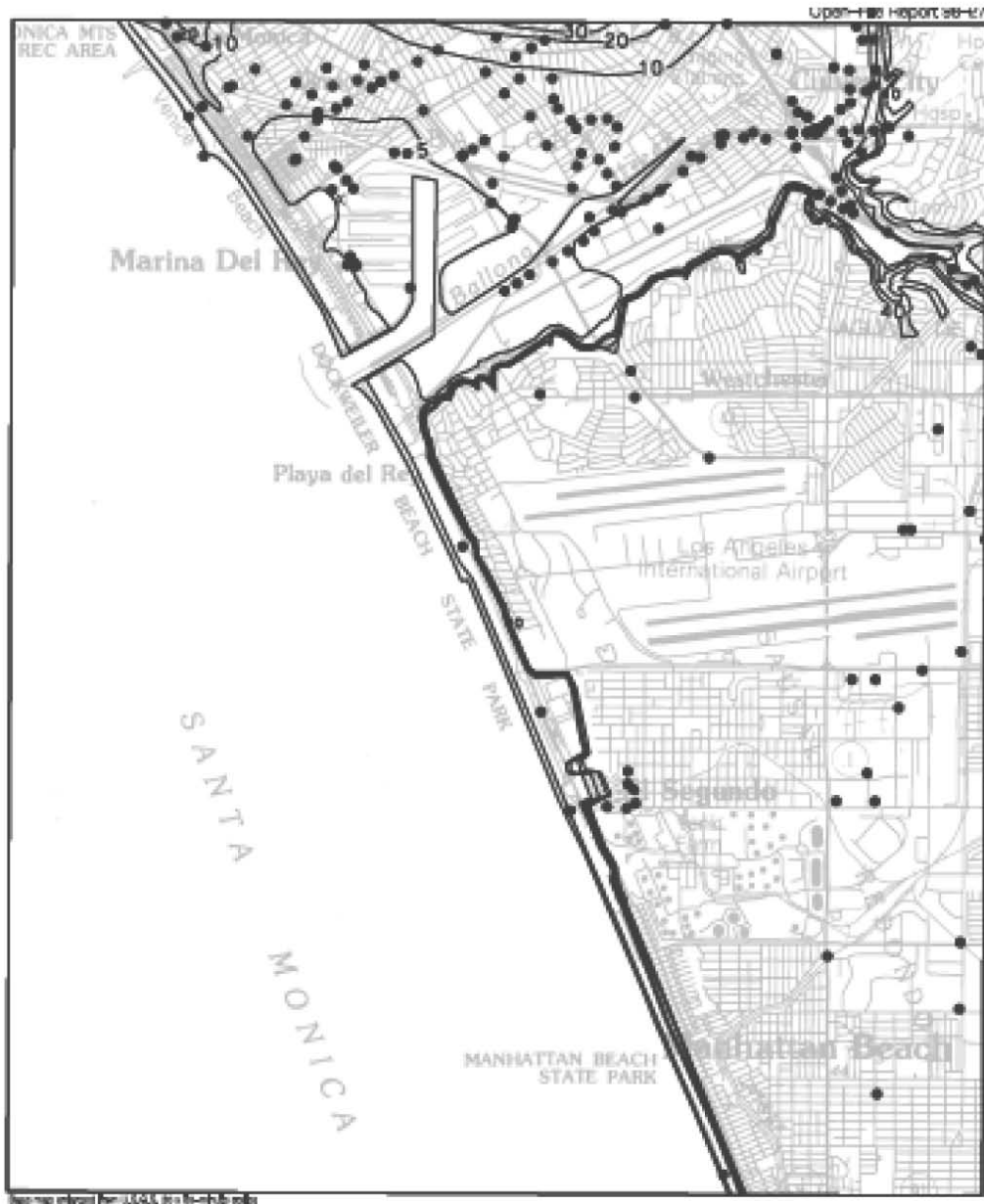
New development in the Marina as of 2005

As shown in Figure 4.3, a snapshot of the redevelopment status in as of late July 2005, many parcels in the Marina have or will be soon going through redevelopment. In the back basins, much of the surrounding development surrounding Basins D and E will change. Working with each lessee, through negotiations and the entitlement process, LACDBH expects the BMP's for on-site stormwater management incorporated into these projects to eliminate the majority of the runoff that currently sheet flows across surface parking lots and through the small drain parcel drainage systems, thereby improving water quality.

The Structural BMP Program consists of the following non-storm water discharge and storm water discharge control elements:

- ❖ Non-Storm Water Discharge Controls
 - ❑ Low-Flow Storm Drain Diversion Program
 - ❑ Marina Beach Water Quality Improvement Project (Increase Basin D Circulation)
 - ❑ Marina Source Identification and Source Control Program

- ❖ Storm Water Discharge Controls
 - ❑ Sub-Regional Structural BMP Program
 - ❑ Marina Beach Water Quality Improvement Project (Increase Basin D Circulation and Sheet Flow Diversion)
 - ❑ Regional Structural BMP Program



2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Venice Quadrangle.

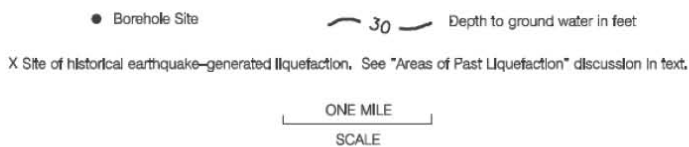


Figure – 4.2
Average Ground Water Contours and Bore Log Data Locations, Venice Quadrangle

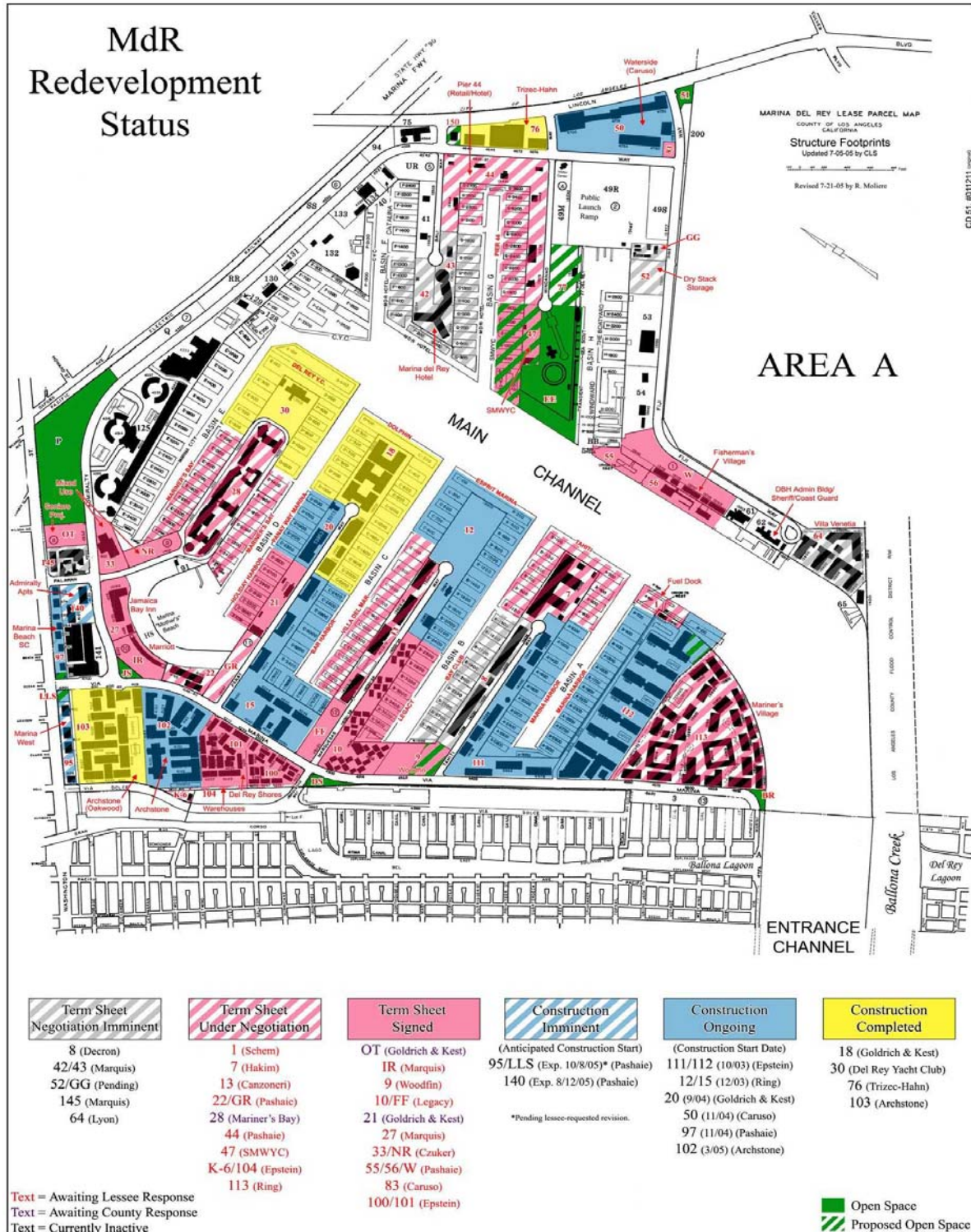


Figure 4.3 Marina del Rey Redevelopment Status

4.4.1 Non-Storm Water Discharge Controls

Potential non-storm water-related sources of bacteria include both direct input into the Marina (from sources such as illegal sewage dumping or leaks from boats, waste from sea mammals, fishes, and birds, etc.) and non-storm water runoff, which may result from over-irrigation, washing cars, driveways, sidewalks, and streets, permitted and illicit discharges, construction dewatering, and natural seepage, etc. Storm drains are the main conveyance systems that carry non-storm water runoff to receiving waterbodies. As stated in Section 2.2.1, implementation efforts will focus on the three priority subwatersheds 1A, 3, and 4, which are tributary directly to Basins D, E, and F. There are three major storm drains located within the Subwatersheds 3 and 4. Subwatershed 1A does not have a major storm drain. Due to the fact that there is no storm drain system in Subwatershed 1A, the most probably flow path of non-storm water runoff is through sheet flow

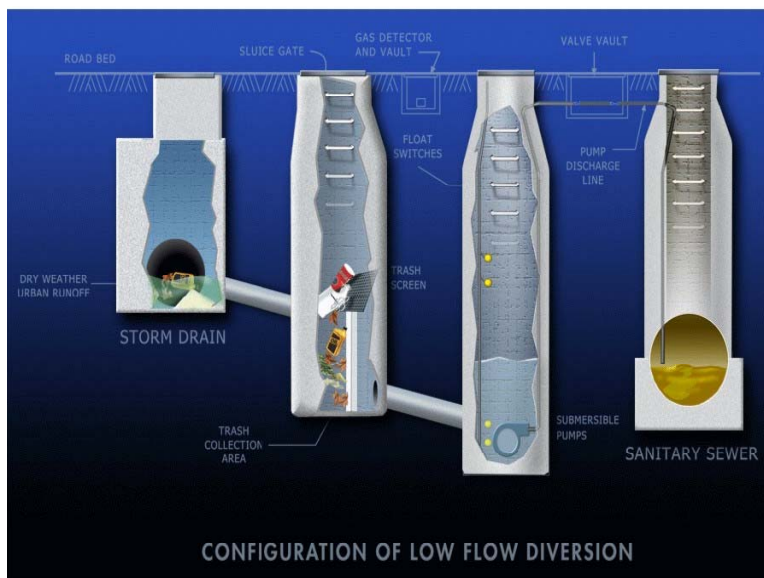
The non-storm water discharge control strategy to reduce quantity and improve quality of runoff consists of a Low-Flow Storm Drain Diversion Program that will divert all the non-storm water runoff from the three major storm drains in the upper watershed, a Marina Beach Water Quality Improvement Project that will increase circulation in Basin D, and a Marina Source Identification and Source Control Program that will identify irregular activities and propose appropriate BMPs. This comprehensive non-storm water discharge control strategy will help the responsible agencies comply with the dry-weather bacteria TMDL, by effectively addressing the bacteria loads in non-storm water runoff as well as those that result from direct input into the Marina from various sources.

Table 4.4.1 Summary of Structural BMP Strategies for the Priority Tributary Areas (Non-Storm Water Discharge Controls)

Priority Tributary Area	Jurisdiction/Areas	Conveyance System	Constraints	Structural BMPs Strategy	Implementation Schedule
Subwatershed 4	Cities of Los Angeles and Culver City (Residential and commercial areas)	(Storm Drain) Project No. 5243 and 3872	<ul style="list-style-type: none"> • Tidal influence • High groundwater table 	Low-flow diversion	Will be completed by March 18, 2007
Subwatershed 3	City of Los Angeles (Residential areas)	(Storm Drain) Project No. 3874	<ul style="list-style-type: none"> • Tidal influence • High groundwater table 	Low-flow diversion	Will be completed by March 18, 2007
Subwatershed 1A	County Unincorporated (Marina)	Small parcel and road drains	<ul style="list-style-type: none"> • No major storm drains • High groundwater table 	Source identification and control	The Non-Point Source Study Will be completed by March 18, 2007
	County Unincorporated (Marina Beach)	None	<ul style="list-style-type: none"> • No major storm drains 	Increase circulation in Basin D	Will be completed by December 2005

4.4.1.1 Low-Flow Storm Drain Diversion Program

Within the Marina del Rey Watershed, as described in Section 2.2.1, there are three major storm drains, Project No. 3872, Project No. 5243, and Project No. 3874, that are located in the upper watershed and ultimately drain into Basin E. Currently, non-storm water runoff from Project No. 3872 and Project No. 5243 is being discharged directly into Oxford Basin, and Project No. 3874 directly outlets into the Boone-Olive Pump Station and is pumped to Basin E via Project No. 86.



Three low-flow diversion structures (see Figure 4.4 for low-flow diversion locations) are being proposed at these three storm drains. The diversions will divert the non-storm water runoff from these storm drains to nearby sewer lines and then to the Hyperion Treatment Plant for treatment.

As described at the beginning of this section, the Marina del Rey Watershed is under tidal influence. This constraint restricts the placement of the low-flow diversions along the storm drain line. The low-flow diversion structures have to be placed above the limit of the tidal influence to prevent salinity from mixing with the non-storm water runoff. Salinity is prohibited from being discharged to the sewer system. Due to this constraint, all of the non-storm water runoff from the two storm drains (Project No. 5243 and Project No. 3872) that outlet to the Oxford Basin cannot be fully captured. Various alternatives were investigated to address the stretch of the storm drains affected by tidal influence. Two different new technologies will be tested along the affected stretch of the storm drains in conjunction with two proposed low-flow diversions.

Below are preliminary design concepts of the proposed low-flow diversions.

Low-Flow Diversion Project at Storm Drain Project No. 5243

The proposed low-flow project consists of constructing a low-flow diversion system for Project No. 5243, Line A, at the intersection of Washington Boulevard and Thatcher Avenue. The proposed diversion system is located where the mainline is above the tidal influence and would capture an estimated 126 catch basins in the upper reach. For the remaining reaches below the intersection that are under tidal influence, a

proprietary bioretention filter BMP will be installed as a pilot at 10 catch basins to test its effectiveness. If deemed effective through monitoring, the remaining 36 catch basins will be retrofitted in a subsequent phase. Project No. 5243 drains approximately 579 acres of land.

Low-Flow Diversion Project at Boone-Olive Pump Station (Storm Drain Project No. 3874)

The proposed project consists of installing a submersible pump in the existing Boone-Olive Pump Station control house to divert non-storm water runoff to a sewer line. Project No. 3874 collects non-storm water runoff through 22 catch basins and drains approximately 80 acres of residential land. Non-storm water runoff from the 22 catch basins will be captured in this low-flow diversion.



Low-Flow Diversion Project at Storm Drain Project No. 3872

To prevent salt-water intrusion into the wet well, the proposed low-flow diversion system will be located upstream of the tidal influence at the intersection of Stanford Avenue and Berkeley Drive. The low-flow diversion system will capture non-storm water runoff from 27 catch basins upstream of the system. The project also consists of modification of 28 catch basins where the storm drain invert is below the tidal influence and installation a separate drain line to divert the urban runoff from these 28 catch basins and outlets to the low-flow diversion system at Stanford Avenue. Project No. 3872 drains approximately 92 acres of land.

These preliminary design concepts are subject to change if they are deemed impractical after field investigation. The low-flow diversions will divert non-storm water runoff from the storm drain to the sanitary sewer for treatment at the Hyperion Treatment Plant. To ensure that the low-flow diversion structures are properly maintained, repaired, upgraded, and inspected, the County will develop an Operation and Maintenance Program.



Figure 4.4
Proposed Low Flow Diversions
for Marina del Rey

<p>DEPARTMENT OF PUBLIC WORKS</p>	<p>RITA L. ROBINSON DIRECTOR</p>		<p>DEPARTMENT OF PUBLIC WORKS</p>		<p>SHAHRAM KHARAGHANI PROGRAM MANAGER</p>		<p>WATERSHED PROTECTION CITY OF LOS ANGELES BUREAU OF SANITATION</p>
	<p>File-Loc: S:\Produce\Projects\Imd\Marina del rey(3).apr</p>	<p>Drawn By: MS</p>	<p>Checked By: MS</p>	<p>Date: 7/25/05</p>	<p>Date Revised: XXXXXX</p>	<p><small>The map shall not be copied or reproduced, all or any part thereof, whether for distribution or resale, without written permission of the Dept. of Public Works, City of Los Angeles. Thomas Bros. Data reproduced with the permission granted by THOMAS BROS. MAP.</small></p>	

4.4.1.2 Marina Beach Water Quality Improvement Project (Increase Basin D Circulation)

The second non-storm water discharge controls program is LACDBH's "Marina Beach Water Quality Improvement Project". This project has two major components:

- ✓ Storm water discharge control solution -- captures sheet flow from the properties adjacent to Basin D, near Marina Beach and redirects the flow through a storm drain discharging into Basin C (this solution is discussed at greater length in the following section on storm water controls).



- ✓ Non-storm water discharge control solution -- promotes water circulation and increase water mixing through a low speed propeller circulating system.

The non-storm water discharge controls portion of the Marina Beach Water Quality Improvement Project is aimed at improving the water circulation at Marina Beach, to help meet water quality standards in the TMDL. Two water circulators will be mounted on guide poles underneath the existing floating dock on the north side of the beach. The pumps have a large, slowly rotating "banana-blade" propeller, encased in a cage for safety, which will induce a gentle current along the beach face. Increased circulation is expected to result in more bacterial indicator exposure to ultra violet light (from sunlight) and promote rapid die-off and lowering bacteria levels to within TMDL water quality standards. Construction of the project will be completed by December 2005.

4.4.1.3 Marina Source Identification and Control Program

On August 7, 2003, LARWQCB adopted an amendment to the Water Quality Control Plan to incorporate the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL (Attachment A of Resolution No. 2003-012 of the TMDL). The amendment states the following (page 3 under Source Analysis):

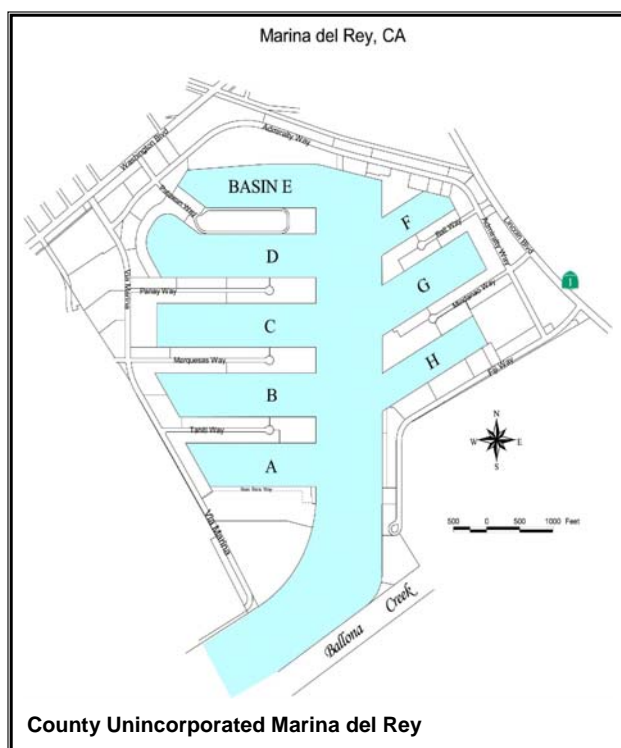
"Dry weather urban runoff and stormwater conveyed by storm drains are the primary sources of elevated bacterial indicator densities to MdrH and Mothers' Beach back basins during dry and wet-weather."

There are no major storm drains within the Marina. However, there are small parcel drains and road drains. The majority of non-storm water runoff in the Marina is caused by over irrigation, spills, and washing of paved areas. These non-storm water runoffs

flow to nearby streets or into parcel/road drains. The non-storm water runoffs do not occur on a consistent basis, and can be visually tracked and corrected with appropriate BMPs. The areas surrounding Basins D, E, and F are small and compact. Typical non-storm water associated with the land uses surrounding these basins is limited to residential, commercial, and recreational.

The most effective approach to address the non-storm water runoff within the Marina is through source identification and source control based on the characteristics discussed above. Source identification and source control will be conducted in a Non-Point Source Study required by the TMDL. The Study will identify and characterize the non-point sources of indicator bacteria that impact Marina Beach and Basins D, E, and F of the MdRH. The scope of work for the Study is summarized in Section 4.5.1.

The Study proposes to conduct dry-and wet-weather spatial and temporal surveys, inspect sewerage infrastructure of the Marina Beach areas, investigate illicit boat discharges, assess the beach sand as a potential reservoir for bacteria, and perform additional, corroborative studies based upon preliminary data. The dry-and wet-weather spatial and temporal surveys include performing water quality sampling in the receiving waters, providing bird surveys, visual observation of potential bacteria sources, and developing a questionnaire to identify hard-to-find non-point sources of bacteria. Visual observations will include, but are not limited to, boating activities and practices that may attract wildlife, wildlife distribution patterns, accumulation and runoff of fecal material from parking lots or other areas, boat or dock wash down, small drain discharges, maintenance practices related to restaurants or other operations near the water, surface runoff, and visitor behavior. Spot samplings for bacteria analysis will be conducted in conjunction with the visual observations to quantify the bacteria loading from any observed sources. One of the Study's objectives is to recommend BMPs to address identified sources. The Study commenced in September 2005 and will be completed in October 2006.



The BMPs recommended by the Non-Point Source Study will be implemented at the identified sources to address and control both the non-storm water and storm water pollution sources.

4.4.2 Storm Water Discharge Controls

As stormwater runs across roofs, lawns, paved streets, driveways from residential, commercial and recreational sites, it picks up pollutants such as sediment, bacteria, nutrients, metals, pesticides, and trash. The sources of these pollutants are diffuse and difficult to measure. This sub-section describes the structural controls proposed to address the bacteria loads in stormwater runoffs (Non-structural controls, such as public outreach and institutional controls, are addressed under section 4.2 and 4.3). Structural BMPs are the most direct measure to help mitigate pollutants from stormwater runoff. The storm water discharge controls for Subwatersheds 1A, 3, and 4 consist of a Sub-Regional Control Program, a Marina Beach Water Quality Improvement Project (Sheet Flow Diversion), and a Regional Control Program. This element is expected to take place in four phases.

Table 4.4.2 Summary of Structural BMP Strategies for the Priority Tributary Areas (Storm Water Discharge Controls)

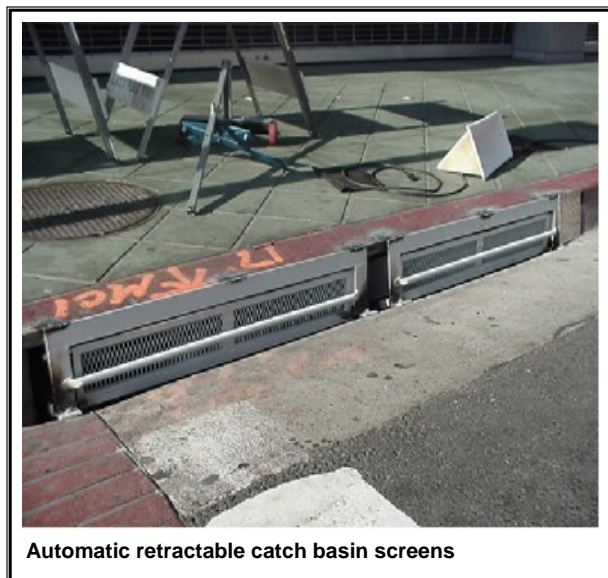
Priority Tributary Area	Jurisdiction/Areas	Conveyance System	Constraints	Structural BMPs Strategy	Implementation Schedule
Subwatershed 4	Cities of Los Angeles and Culver City (Residential and commercial areas)	(Storm Drain) Project No. 5243 and 3872	<ul style="list-style-type: none"> • No publicly owned parcels except school sites • High groundwater table 	<ul style="list-style-type: none"> • Regional Solution • Sub-Regional Structural BMPs 	Will initiate investigation in Phase I
Subwatershed 3	City of Los Angeles (Residential areas)	(Storm Drain) Project No. 3874	<ul style="list-style-type: none"> • No publicly owned parcels • High groundwater table 	<ul style="list-style-type: none"> • Regional Solution 	Will initiate investigation in Phase I
Subwatershed 1A	County Unincorporated (Marina)	Small parcel and road drains	<ul style="list-style-type: none"> • Limited publicly owned parcels • Most of the Marina will be redeveloped in the next 5-8 years • High groundwater table • No major storm drains 	<ul style="list-style-type: none"> • Sub-Regional Structural BMPs 	Will begin in Phase I
	County Unincorporated (Marina Beach)	None	<ul style="list-style-type: none"> • Limited publicly owned parcels • Most of the Marina will be redeveloped in the next 5-8 years • High groundwater table • No major storm drains 	<ul style="list-style-type: none"> • Temporarily divert sheet flow from Basin D to Basin C • Increase Basin D circulation 	Will begin in Phase I and will be completed by December 2005

4.4.2.1 Sub-Regional Structural Program

The Sub-Regional Structural Program will be implemented in selected areas tributary to the impaired back basins (Basins D, E, and F.) The sub-regional controls consist of a single or series of structural BMPs that primarily address flow from a particular defined site within a subwatershed. They are intended to treat only that site with minor contributions from adjoining streets and/or properties. Sub-regional controls generally have a beneficial reuse component as part of treatment train or single structural BMP.



Bioretention strip



Automatic retractable catch basin screens

Typical sub-regional structural BMPs are:

- ✓ Porous paving
- ✓ Grassy swales, retention grading
- ✓ Cisterns, rain barrels, gravel trenches, infiltration galleries/storage tanks, bio retention ponds
- ✓ Sunken street/parking lot medians, sidewalk/parking lot planters
- ✓ Catch basin inserts

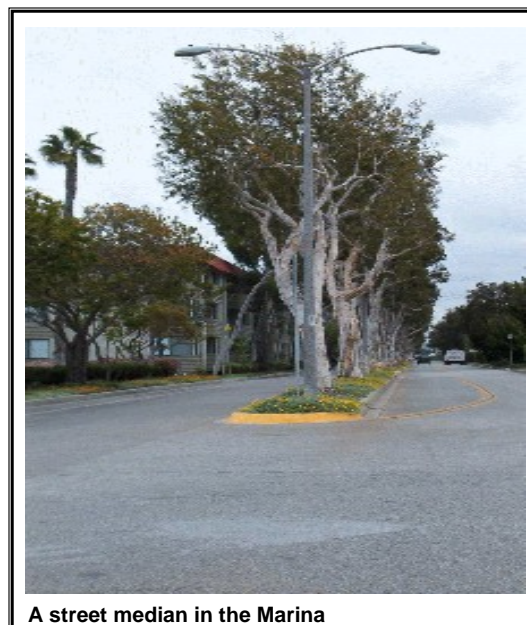
By capturing and treating stormwater runoffs on site, bacterial densities are reduced as a contribution to the storm drain system, and the demand for potable water for landscape irrigation is reduced.

As discussed in further detail below, sub-regional solutions have been categorized into public sites, leased parcels, and private sites. Private sites are further broken down into commercial/industrial and residential categories.

Public Sites

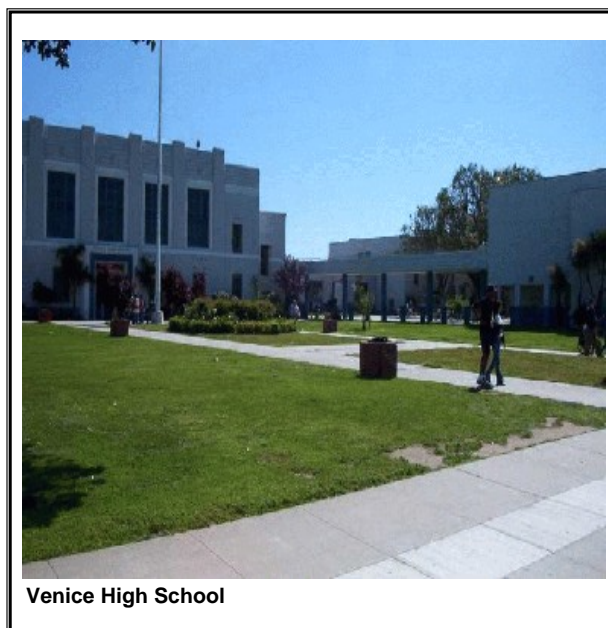
Publicly owned parcels and facilities such as parking lots, libraries, and parks in the Marina del Rey Watershed were located using GIS (See Figure 4.5). Parcels within the Marina del Rey County unincorporated area are owned by County of Los Angeles and are broken down into long-term privately leased and LACDBH maintained public spaces. Other public parcels identified in the watershed are within City of Los Angeles' jurisdiction.

Caltrans is currently evaluating the State Routes in the watershed to identify candidate locations for possible treatment BMPs or other types of sub-regional solutions. Caltrans will to solidify details during the initial phase of implementation.



A street median in the Marina

Public spaces, such as parking lots and other public areas, publicly owned facilities, and public streets and driveways are considered good candidates for sub-regional controls. Table 4.4.3 is a list of public facilities identified as potential sites within the watershed for implementation of sub-regional structural BMPs. Following Table 4.4.3 are fact sheets on each of the potential sites.



Venice High School

Schools are generally considered good sites for sub-regional solutions because they typically have large open spaces consisting primarily of grassy fields and asphalt parking lots. There are four schools identified in the watershed, Venice High School, Mark Twain Middle School, Beethoven Street Elementary School, and Coeur Dalene Avenue Elementary School. These schools are located in the upper reach of the watershed and may provide future opportunities for water treatment and reuse. The schools are under the Jurisdiction of the Los Angeles Unified School District.

The school district was not listed among the responsible agencies for this TMDL, and has not been consulted on the development of this implementation plan. During the course of the implementation, the school district will be consulted to determine

whether the implementation of BMPs within the school sites is feasible. The cooperation of the LARWQCB is needed and will be sought in bringing to the attention of the school district the importance and urgency of addressing surface water quality impairment through TMDL implementation, and the vital role of school districts (which are subject to Phase II NPDES storm water regulations) in cooperating with public agencies towards the common goal of surface water quality enhancement. When the commitment from the school district is obtained, schools may be included in the list of potential structural BMP sites listed in Table 4.4.3.

The implementation of public sub-regional controls is lengthy. A typical structural BMP project takes approximately four to five years for public agencies to complete. The following is an example of a structural BMP project delivery process for the County of Los Angeles, and the process is comprised of five phases:

- ❖ Feasibility Study (1 year)
- ❖ Project Design Concept (1 year)
- ❖ Design and Permitting (1 to 2 years)
- ❖ Construction Bid and Award (6 to 9 months)
- ❖ Construction (6 to 18 months)

A Feasibility Study is a detailed assessment of the project's alternatives. The objective of this assessment is to identify all viable options that could satisfy the established project needs. Such an assessment entails a thorough review of the project needs and conditions to assist the development and selection of the most feasible, beneficial, and cost effective alternatives for further development.

Upon selection and approval of the most feasible project alternative(s), a project design concept builds upon the Feasibility Study and is an in-depth development of the functional and operational requirements for each alternative. The objective of this phase is to gather sufficient information to assist in the selection of the most suitable alternative for design and construction.

Following the approval of the project design concept, the project goes into the Design phase. The objective of this phase is to prepare plans and specifications necessary to construct the project. This phase includes environmental clearance, permitting, and if needed, appropriate agency approval.

Upon completion of the Design phase, the project will go into advertising for construction, bid opening, and award of a construction contract to a private company. The objective of this phase is to obtain the services from a contractor to construct the project according to plan and specifications. The last phase is to construct the project.

Most of the public agencies have very similar structural BMP project delivery process as the County of Los Angeles.

Leased Parcels

The County of Los Angeles has granted long-term leases to developers on most of the properties in the Marina del Rey County unincorporated areas. The LACDBH duties include Marina lease administration and leasehold redevelopment, as well as premises maintenance inspections, to enhance public access and enjoyment while maximizing County revenue. The leased parcels include apartments, hotels, restaurants, commercial and retail businesses, docks and yacht clubs.

In 1995, the Marina del Rey Asset Management Strategy (AMS) was adopted by the County of Los Angeles Board of Supervisors. The AMS is a strategy designed to provide a framework for making short-term leasing and development decisions so that they remain consistent with longer-term redevelopment goals; provide programs to encourage redevelopment and refurbishment while ensuring quality maintenance of leasehold facilities during remaining lease terms; and, effect a strategy for the Marina's second-generation development that better integrates recreational and commercial/residential areas. Many of the parcels in the back basins, particularly around Basins D and E are slated for redevelopment under the AMS.



Redevelopment and new development in Marina del Rey must get project approvals from up to four of the following separate entities during the entitlement process, in addition to necessary demolition and construction permits from Public Works Building and Safety Division, Fire Department, etc.:

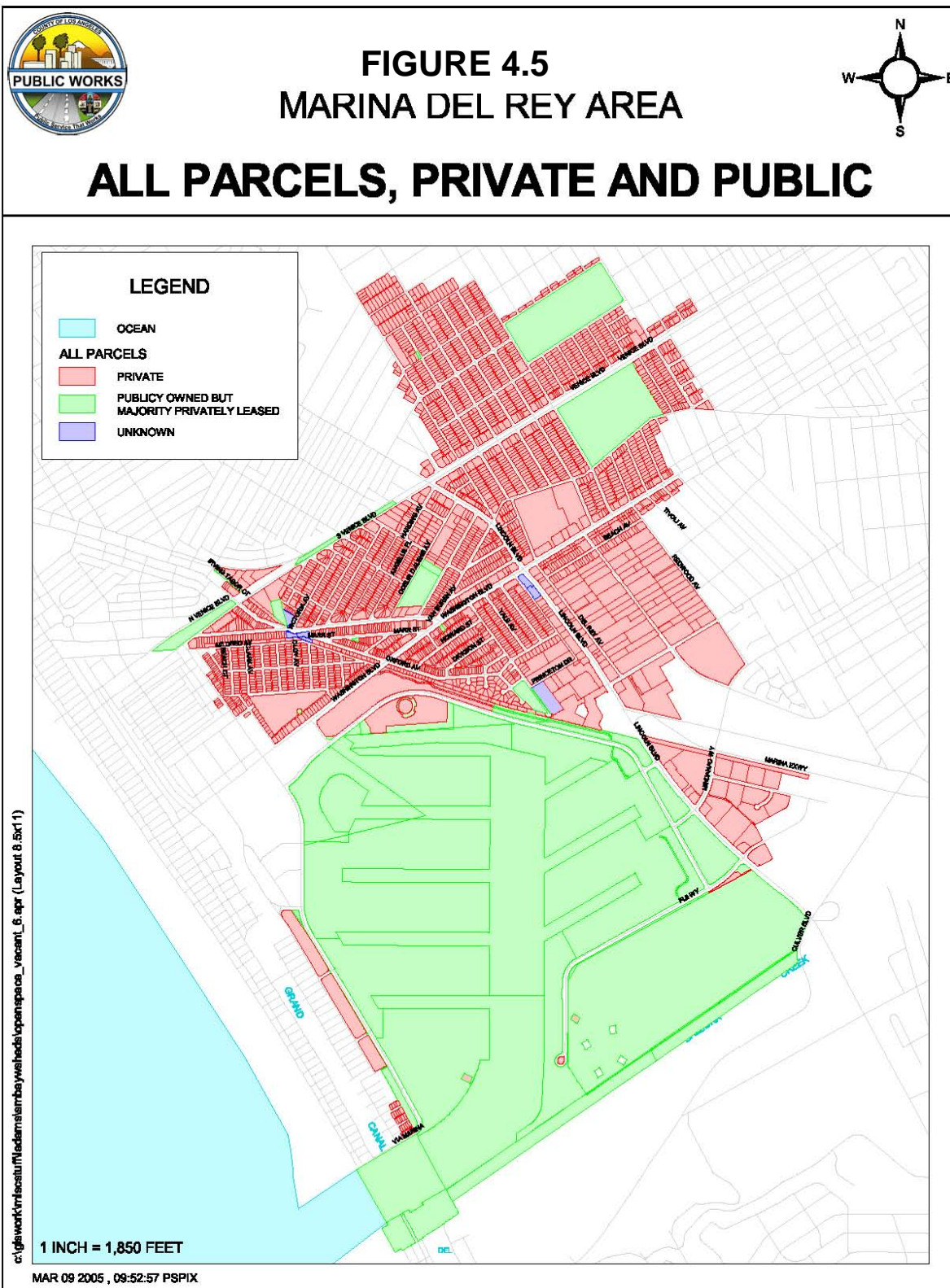
- ✓ Marina del Rey Design Control Board – reviews architectural design and landscaping
- ✓ County Regional Planning Commission – Approves Coastal Development Permits and Conditional Use Permits. Water quality provisions of the Local Coastal Program (LCP) are primarily implemented through the Municipal Stormwater NPDES Permit requirements in coastal permits.
- ✓ County Board of Supervisors – Approval required if the project requests an amendment to the LCP or is appealed from decision of the Regional Planning Commission

- ✓ California Coastal Commission – as lead agency responsible for carrying out the Coastal Act, the CCC must approve the overall LCP, approves projects in all cases involving slip demolition/construction or any other in-water construction, approves projects in all cases where an amendment to the LCP is needed, and approves projects in cases where a decision of the Regional Planning Commission is appealed by a member of the public or when the CCC, on its own motion, decides to review a proposed project.

Currently, the CCC is conducting a LCP Periodic Review of the Marina del Rey LCP. The recommendations in the review are meant to assist the County in continued implementation of the LCP in conformity with the policies of the Coastal Act. While these recommendations do not directly amend the certified LCP, they are suggested actions that could be carried out through policy and ordinance changes in future amendments to the LCP, changes in how the County implements the LCP in issuing coastal permits or through other County studies, educational efforts or programs. In the section on water quality of LCP Periodic Review, the CCC recommends the County continue to require that development incorporate non-structural and structural BMPs, where necessary, that minimize the volume, velocity and pollutant load of stormwater runoff, prior to discharge into stormwater conveyance systems, coastal waters, or the beach. They also recommend that any coastal development application shall include a Water Quality Management Plan that includes management measures and BMPs to avoid or minimize runoff during construction and post-construction from the property.

Private Sites

The privately owned sites are divided into three categories (commercial, industrial, and residential). Some of the sub-regional controls selected for the public sites could be used at the private sites. However, the MDRWRA would have to negotiate the feasibility of these sub-regional controls with private parties.



SECTION 4 PROPOSED IMPLEMENTATION PLAN



Table 4.4.3 Summary of Potential Structural BMP Projects at Public Sites

Site No.	Site Name	Site Type	Agency/Ownership	Proposed BMP(s)	Proposed Schedule ¹	Commitment Level ^{2,3}
1	DBH Parking Lot 5 (next to the Basin F)	Parking lot	LADBH \ LA County	Bioretention filter system	Phase I & II	Initiate
2	DBH Parking Lot 7 (next to Admiralty Park)	Parking lot	LADBH \ LA County	Cistern/rain barrel	Phase I & II	Initiate
3	Admiralty Park	Public Park	LADBH \ LA County	Cistern/rain barrel, grassy swale, retention grading	Phase II	Evaluate
4	Admiralty Way Widening	LA County Route	LA County	Cistern/rain barrel, grassy swale, retention grading	Phase II & III	Evaluate
5	LA County Fire Department (FS110)	Government Building	Fire Dept \ LA County	Bioretention filter system	Phase III	Evaluate
6	Marina del Rey Library	Public Library	Library \ LA County	Bioretention filter system	Phase III	Evaluate
7	Venice Boulevard	State Route	Caltrans	Biofiltration system	Phase IV	Evaluate

Notes:

1. Proposed Implementation Schedule:

Phase I - FY 2005-06 – FY 2006-07

Phase II - FY 2007-08 – FY 2011-12

Phase III - FY 2012-13 – FY 2016-17

Phase IV - FY2017-18 – FY 2021-22

2. Initiate - The MDRWRA will immediately take action to initiate the program or project. While not all programs or projects will be ready at the beginning of implementation, the commitment to full implementation of the project or program exists and will be actively pursued.

3. Evaluate - The JG/agency will consider the viability of the program or project. No further action may be taken. The evaluation will include cost/benefit analysis, constructability reviews, program implementation assessment, etc. to determine if a project is ready to be piloted or implemented. A further project may or may not arise after the evaluation is complete.

SECTION 4 PROPOSED IMPLEMENTATION PLAN



Table 4.4.4 Sub-Regional Structural BMP Program - Proposed Implementation Schedule

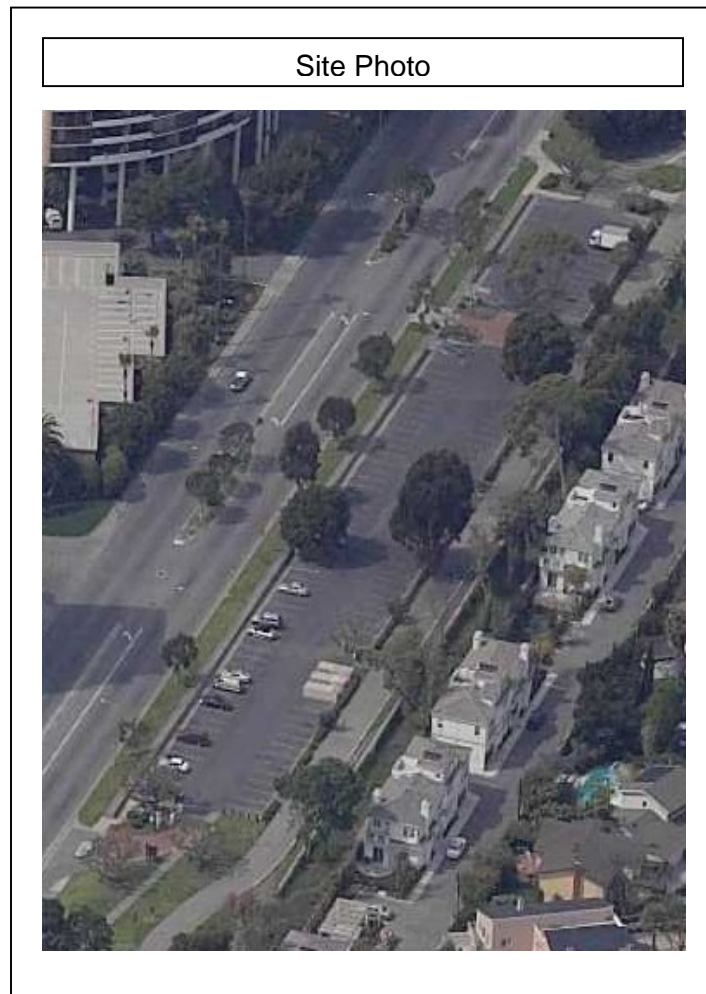
No.	Sub-regional Structural Project	FY05/06	FY06/07	FY07/08	FY08/09	FY09/10	FY10/11	FY11/12	FY12/13	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22
1	Beaches & Harbor Parking Lot 5 (next to the Basin F)	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
2	Beaches & Harbor Parking Lot 7 (next to Admiralty Park)	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
3	Admiralty Park	Light Blue	Light Blue	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
4	Admiralty Way Widening	Light Blue	Light Blue	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
5	LA County Fire Department	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
6	Marina del Rey Library	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
7	Venice Boulevard	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Vertical Lines	Diagonal Lines	Horizontal Lines	Dark Blue

Legend		Feasibility Study
		Project Design Concept
		Design and Permitting
		Construction Bid and Award
		Construction
		Operation and Maintenance

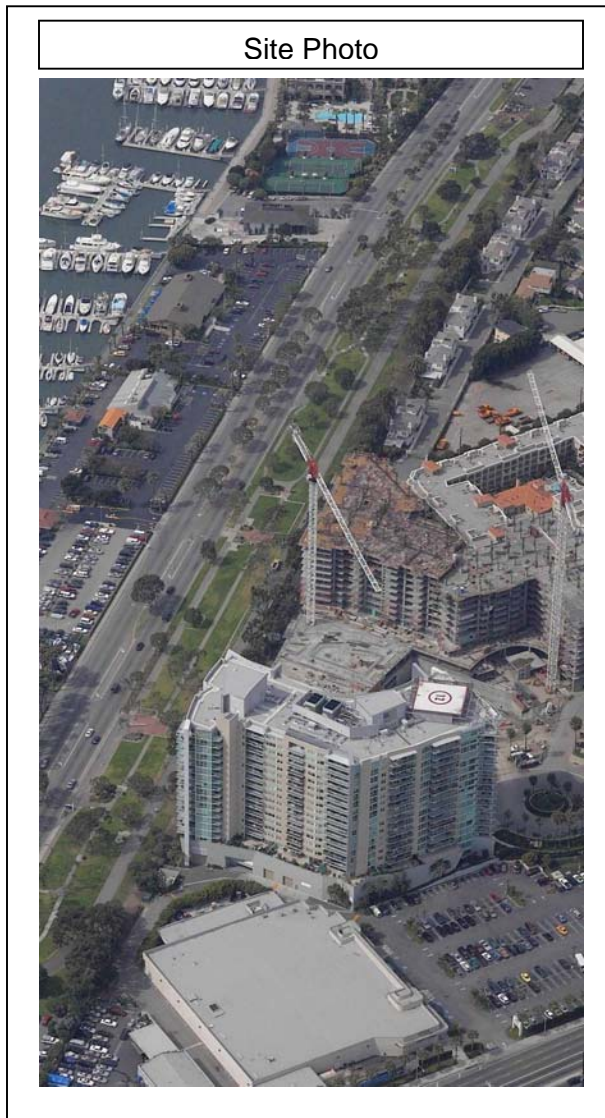
Fact Sheet: Subregional Project	
Project Name	DBH Parking Lot 5
Jurisdictional Lead	County of Los Angeles
Project Location	Beaches and Harbors parking lot no. 5 right next to Basin F
Subwatershed	1A
Project Description/Characteristics	Bioretention filter system would be installed to capture sheet flow from the parking lot. This parking lot is right next to Basin F. Due to the high groundwater table in the area, appropriate structural BMPs are very limited. Infiltration BMPs such as porous pavement is not feasible because the soil is not deep enough to allow the process of infiltration. Typical pollutants such oil and grease from the parking lot would infiltrate into the groundwater and gradually seep out to Basin F.
Land Use(s) Targeted	Open Space/Agriculture
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants
Permitting/Environmental Issues	Coastal Commission
Commitment Level	Initiate
Tentative Start and End Date	Phase I through Phase II (FY 05-06 through FY 09-10)



Fact Sheet: Subregional Project	
Project Name	DBH Parking Lot 7
Jurisdictional Lead	County of Los Angeles
Project Location	Beaches and Harbors parking lot no. 7 right next to the Admiralty Park
Subwatershed	1A
Project Description/Characteristics	Cistern/Rain barrel would be installed to store the stormwater runoff from the parking lot, treat it, and reuse it for the Admiralty Park irrigation
Land Use(s) Targeted	Open Space/Agriculture
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants and focus on beneficial re-use of stormwater
Permitting/Environmental Issues	TBD
Commitment Level	Initiate
Tentative Start and End Date	Phase I through Phase II (FY 05-06 through FY 09-10)



Fact Sheet: Subregional Project	
Project Name	Admiralty Park
Jurisdictional Lead	County of Los Angeles
Project Location	Admiralty Park
Subwatershed	1A
Project Description/ Characteristics	Cistern/Rain barrel would be installed to store stormwater runoff from the surrounding areas.
Land Use(s) Targeted	Open Space/Agriculture
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants and focus on beneficial re-use of stormwater
Permitting/Environmental Issues	TDB
Commitment Level	Evaluate
Tentative Start and End Date	Phase II (FY 07-08 through FY 11-12)



Fact Sheet: Subregional Project	
Project Name	Admiralty Way Widening
Jurisdictional Lead	County of Los Angeles
Project Location	Admiralty Way from Via Marina to Fiji Way
Subwatershed	1A
Project Description/ Characteristics	Cistern/Rain barrel, Grassy Swale, Retention Grading may be incorporated as part of the Admiralty Way widening project
Land Use(s) Targeted	Open Space, Commercial, Transportation/Utilities/Mixed, Multifamily
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants and focus on beneficial re-use of stormwater
Permitting/Environmental Issues	Caltrans, Coastal Commission, DBH
Commitment Level	Evaluate
Tentative Start and End Date	Phase II through III (FY 07-08 through FY 12-13)

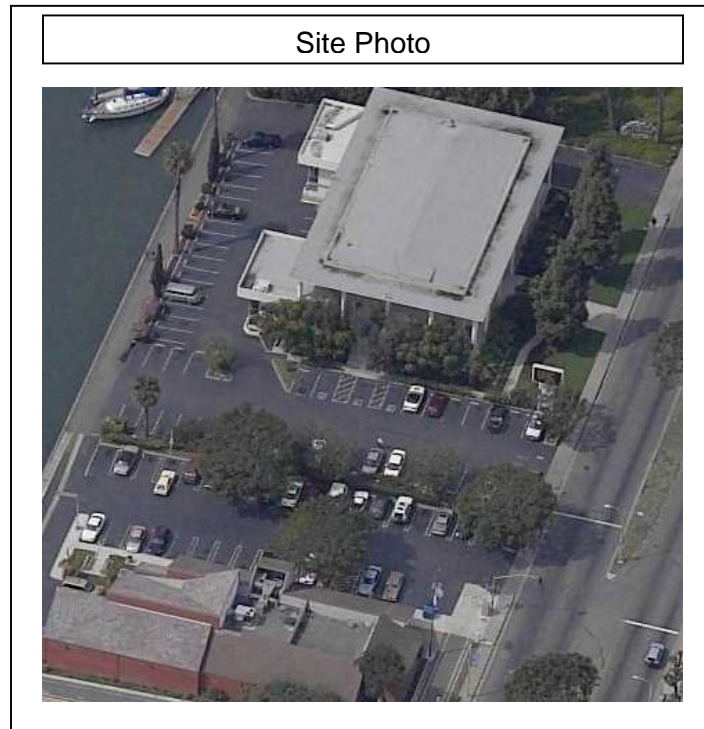
Site Photo



Fact Sheet: Subregional Project	
Project Name	Los Angeles County Fire Department (FS110)
Jurisdictional Lead	County of Los Angeles
Project Location	4433 Admiralty Way, Marina Del Rey 90292-5415
Subwatershed	1A
Project Description/Characteristics	Bioretention filter system would be installed to capture sheet flow from the parking lot. This site is right next to the Main channel between Basin F and Basin E. Due to the high groundwater table in the area, appropriate structural BMPs are very limited. Infiltration BMPs such as porous pavement is not feasible because the soil is not deep enough to allow the process of infiltration. Typical pollutants such oil and grease from the parking lot would infiltrate into the groundwater and gradually seep out to Basin F.
Land Use(s) Targeted	Commercial
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants
Permitting/Environmental Issues	DBH, Coastal Commission
Commitment Level	Evaluate
Tentative Start and End Date	Phase III (FY 12-13 through FY 16-17)



Fact Sheet: Subregional Project	
Project Name	Marina del Rey Library
Jurisdictional Lead	County of Los Angeles
Project Location/Characteristics	4533 Admiralty Way, Marina Del Rey 90292-5415
Subwatershed	1A
Project Description	Bioretention filter system would be installed to capture sheet flow from the parking lot. This site is right next to the Main channel between Basin F and Basin E. Due to the high groundwater table in the area, appropriate structural BMPs are very limited. Infiltration BMPs such as porous pavement is not feasible because the soil is not deep enough to allow the process of infiltration. Typical pollutants such oil and grease from the parking lot would infiltrate into the groundwater and gradually seep out to Basin F.
Land Use(s) Targeted	Commercial
Estimated Drainage Area	TBD
Estimated Project Footprint	TBD
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Addresses multiple pollutants
Permitting/Environmental Issues	DBH, Coastal Commission
Committed Level	Evaluate
Tentative Start and End Date	Phase III (FY 12-13 through FY 16-17)



Fact Sheet: Subregional Project	
Project Name	Venice Boulevard
Jurisdictional Lead	Caltrans owns the roadway. City of Los Angeles maintains it per a delegated maintenance agreement. County of LA owns few drains in the proposed project area.
Project Location	Shoulder spaces on Venice Boulevard between Walgrove and May Street.
Subwatershed	4
Project Description/Characteristics	The wide shoulder spaces (15ft +/-) along Venice Boulevard could be considered to implement structural BMPs such as biofiltration or other treatment technologies to treat runoff.
Land Use(s) Targeted	Single and multiple family dwellings, commercial, school, transportation, etc.
Estimated Drainage Area	5 acres for one side, 10 acres for both sides
Estimated Project Footprint	15'X1500'
Estimated Runoff Managed	TBD
IWRA Criteria Achieved	Treat multiple pollutants
Permitting/Environmental Issues	The locations may be in the jurisdiction of Coastal Commission. There are long-term issues and concerns associated with activities of the Venice High School, existing businesses and residents adjacent to the project area, and impacts to the existing street trees.
Commitment Level	Evaluate
Tentative Start Date	Phase IV (FY 17-18 through FY 21-22)



4.4.2.2 Marina Beach Water Quality Improve Project (Sheet Flow Diversion)

Presently, there is a large parking lot and several restaurants draining directly to the back of Marina Beach. Capturing and redirecting low-flows and stormwater runoff away from the back of Marina Beach will eliminate bacterial indicator contributions from the adjacent parking lots and buildings and result in fewer beach closures. The storm water discharge control part of the Marina Beach Water Quality Improvement Project involves the construction of a stormwater collection system that would convey stormwater from the development surrounding the beach with an outfall in Basin C to the south. The proposed diversions are not expected to significantly degrade water quality in Basin C, which is not subject to compliance under the TMDL.

While this project will eliminate much of the stormwater that drains directly across the beach sand and into the beach waters, thereby reducing the amount of urban runoff entering the water from the surrounding parking lots and restaurants, this system is only an interim solution to stormwater management around Marina Beach. Most of the land around Marina Beach will be redeveloped over the next decade and the intensity of use will increase. These projects, including new hotels, restaurants and parking structures, must conform to current entitlement regulations, including coastal development permits and the need to meet SUSMP requirements through the County's building permit process. As this redevelopment unfolds and each parcel is responsible for meeting current storm water management requirements in dealing with their local runoff, the necessity of moving stormwater to the adjacent basin will diminish.

4.4.2.3 Regional Structural BMP Program

Regional solutions are generally considered "end-of-pipe" treatment and typically require large parcels of land. The most common type of regional control is a water quality centralized treatment facility sized and configured to treat multiple constituents. Smaller, expandable "package plants" are also used. Retrofits of this type are unique and a significant amount of time is needed to study site-specific limitations with respect to right-of-way, engineering, permitting, and other constraints. They are also the most expensive and most difficult to plan and construct.

Stormwater runoff entering Oxford Basin is channelized from Subwatershed 4. Currently, one sub-regional structural BMP



is proposed for controlling bacteria waste loads associated with storm water discharges from this subwatershed, due to space and other constraints explained in section 4.4. Although non-structural controls are planned for this sub-watershed, the responsible agencies recognize the need for additional structural BMPs for this subwatershed. Feasibility analysis of a regional control strategy will be initiated in Phase I. One possible regional strategy is to construct a treatment plant in the vicinity of Oxford Basin. The preliminary concept of the regional strategy is to capture runoff from both Subwatershed 3 and 4. The treated runoff could then be beneficially reused for landscaping and irrigation. If none of these beneficial reuse options prove feasible, the treated water could be discharged to Basin E.

Depending on the results of the feasibility study, the regional control strategy may be refined, replaced, or supplemented with additional measures, and alternative regional and sub-regional control strategies will be investigated.

4.5 Studies and Research

The implementation strategies proposed in this plan are based on a limited understanding of bacteria sources and BMP effectiveness. Research into these and other pertinent areas may yield more efficient and cost effective solutions.

The MDRWRA have compiled a list of suggested studies and research that may be helpful over the TMDL implementation timeframe to address several areas where information is lacking or where science and technology are rapidly evolving. While much is known, much is yet to be done in the quest for “good science” in formulating and re-evaluating these TMDLs regulations and the implementation strategies/technologies.

The suggested studies do not necessarily need to be undertaken by the MDRWRA, but could be performed by others. Many of the suggested studies are applicable to the other agencies involved in the Santa Monica Bay Beaches Bacteria TMDL.

4.5.1 Non-Point Source Study

The Marina del Rey Non-Point Source Study is required by the TMDL to assess the non-point sources of indicator bacteria that impact Mothers’ Beach and the back basins of MdRH. With input from the LARWQCB staff, Heal the Bay, and Santa Monica BayKeeper, Weston Solutions, Inc. and the responsible agencies completed the study work plan in June 2005. The study has three objectives:

1. Determine the relative loadings of indicator bacteria to the water bodies listed in the TMDL from sources including but not limited to storm drains, boats, birds, and other non-point sources;
2. Determine the host origin (human, bird, rodent, etc.) from the various sources;

3. Make recommendations on the best ways to reduce bacteria loading to achieve TMDL compliance.

The study objectives will be met through an adaptive, weight-of-evidence approach that involves a series of investigations in the back basins of MdRH to include spatial and temporal surveys, an inspection of sewage infrastructure, a beach sediment investigation, an illicit boat discharge survey, and additional studies.

1. Spatial and Temporal Surveys

Five dry-weather surveys, two wet-weather surveys, library sampling to facilitate the ribotyping technique, and a questionnaire survey will be conducted to assess relative bacterial loading and determine host origin for sources that impact Marina Beach and the back basins of MdRH.

2. Inspection of Sewage Infrastructure

A closed-circuit television camera investigation will be conducted to look for cracks, tree roots, sedimentation, and other evidence of structural integrity problems in sewerage lines adjacent to Marina Beach.

3. Illicit Boat Discharge Investigation

Three boat surveys will be conducted to assess the extent to which boat holding tanks and/or illicit discharge of sewage from boats may impact receiving water quality.

4. Beach Sediment Investigation

A dry-weather and a wet-weather sediment investigation will be conducted to assess the extent to which sediment may act as a reservoir of indicator bacteria at Marina Beach.

5. Additional Studies

Based on data collected during Tasks 1 through 4, corroborative studies will be proposed and conducted to answer very specific questions about localized suspected sources resulting from the preliminary investigation. A separate sampling and analysis plan will be submitted for each additional study to the stakeholders for approval before sampling takes place.

Another additional study is to study on the contribution of bacteria loads from various land uses and the storm water drain system. The purpose of this additional study is to help generate data that will shed some light on the specific land uses and storm water/drain-related problems contributing to the bacterial

exceedances in Basin E. Data generated from this specific study will be evaluated in context of the findings of the rest of the Non-Point Source Study to meaningfully assess the magnitude and the seriousness of the contributions from the targeted sources. Based on the data, the MDRWRA will be able to develop a more refined BMP strategy and prioritize recommended solutions to the bacteria problem in the MdrRH and the Back Basins.

The Non-Point Source Study commenced in September 2005 and will be completed by October 2006, and a schedule of the study can be found in the following table.

Activity	Initiation Date	Completion Date
Task 1 –Spatial and Temporal Surveys	September 1, 2005	June 30, 2006
Task 2 – Inspection of Sewage Infrastructure	September 15, 2005	December 15, 2005
Task 3 – Illicit Boat Discharge Investigation	September 1, 2005	June 30, 2006
Task 4 – Beach Sediment Investigation	July 1, 2005	April 30, 2006
Task 5 – Additional Studies	September 1, 2005	June 30, 2006
Task 6 – Data Analysis and Reporting	May 1, 2006	October 15, 2006
Final Report	October 1, 2006	October 15, 2006

4.5.2 Additional Optional Bacteriological Studies

In recent years, there have been several key studies on bacterial indicators in receiving waters and the effects on human health. The 1996 Santa Monica Bay Epidemiological Study is the most familiar and may set the tone for much of the recent regulations and bacteria TMDLs. More recently, studies conducted by Caltrans and the Southern California Coastal Water Research Project at Mission Bay in San Diego using DNA technology have raised the possibility that traditional bacterial indicators may not necessarily correlate as well to the presence of human pathogens.



Marina Beach facing Basin D

4.5.2.1 Human Health Risk Alternative Indicators

The existing bacterial indicator tests are widely used and have several advantages, along with limitations. Tests measuring total coliform, enterococcus, fecal coliform, and total and fecal coliform ratios have been used for years to predict human health risk

associated with water contact. These tests are advantageous because they are easy to perform, economical, and were based on studies indicating a relationship between bacterial indicators and human health risks such as the Santa Monica Bay Epidemiological Study.

Current bacterial indicator tests have certain limitations. The tests are not rapid. It typically takes 24 to 48 hours to analyze a sample. By the time this occurs, the original bacterial spike incident may have passed. Conversely, testing may miss a potentially high bacterial spike if the sampling is performed on a weekly or longer basis. Both the Caltrans and Mission Bay studies suggest that high levels of total coliform in areas with no sewage spills or leaks do not necessarily signal the presence of harmful pathogens. Coliform is present in decaying organic plant matter such as leaves and grasses, and other sources such as decaying milk and beer. The link between fecal coliform and pathogens was also not as strong as was widely believed. The studies sometimes did not find underlying pathogens in samples with high fecal coliform counts. Testing for fate of the pollutant is not conducted due to the cost and the multiple variables that impact the results.

There is a growing movement that is suggesting other ways to more accurately predict human health risks as science advances into DNA technology. The ideal indicator would be something easy to perform, economical, and provide rapid results. It would ideally be specific to a particular pathogen or could indicate several, and could identify the type of animal/fish producing the pathogen.

4.5.2.2 Disinfection and By-Product Study

One of the ways to reduce bacterial indicator loading into the storm drain system is to disinfect various contributory and delivery infrastructure. The current practices in other fields (such as drinking water supply and wastewater) usually use electro-chemical (Ultra Violet Light, chlorine, mercuric compounds, etc.), or biological (anaerobic/aerobic) processes. At this time, there are a few proprietary/non-proprietary technologies suitable for stormwater applications. Also, the by-products created from these processes may also affect water quality, but little study has been directed in this area.

4.5.2.3 Fate of the Pollutant Bacteria Study

The present bacterial indicator testing is a snap-shot in time of the densities obtained from the field sampling. The limitation is that bacterial indicators are not stationary, but are transitory in nature. Bacterial indicator densities vary over time and their growth and decay are influenced by many bio/chemical and environmental factors.

This study would investigate the fate of the pollutant by creating a site-specific growth/decay curve for bacterial indicator densities. The benefit of this study would be to ensure that contamination within the back basins does not extend outside of those basins.

4.5.2.4 Marina del Rey Bacteria Seasonal Variation Study

Bacterial indicator densities may be affected by variations in the time of year. Seasonal climatological variations in ocean temperature, length of daylight, and atmospheric conditions can affect bacterial indicator densities. Other factors include aquatic biological occurrences such as red tides, grunion runs, fish and bird migration, etc.

4.5.3 BMP Studies

Structural BMP technology is rapidly evolving from its infancy in the early 1990's and is expected to continue its advance over the next 20 years. As the technology matures both for proprietary and non-proprietary devices, there is a need for standardized testing and effectiveness protocols and procedures. This is critical because implementing agencies need to have an accurate measure of how a structural BMP is expected to perform so that water quality solutions can be properly designed. This will also help vendors in creating and improving their products. Many of the agency's standard plans and specifications will require modification and/or new versions incorporating structural BMPs. A common set of standards could be developed and used on a watershed-wide basis.



There is also a need for operations, maintenance, upgrade, and replacement guidelines to assist agencies in maintaining the water quality improvements achieved with these structural BMPs. Continual inspection, monitoring, and cleaning are essential (at this point) for proper structural BMP effectiveness. Again, these procedures could be used by all the agencies within the watershed to provide consistency.

Public Works is currently conducting a study to evaluate how effectively some structural BMPs are at removing pollutants from storm runoff. Caltrans has completed a similar study. More studies of this nature are needed to advance the technology of storm water pollution control.

4.5.4 Reference System Study

The TMDL used Leo Carrillo Beach/Arroyo Sequit Watershed as a reference system to compute allowable exceedances days. However, that reference system is most appropriate for an open beach, not an enclosed harbor. A recent survey by SCCWRP

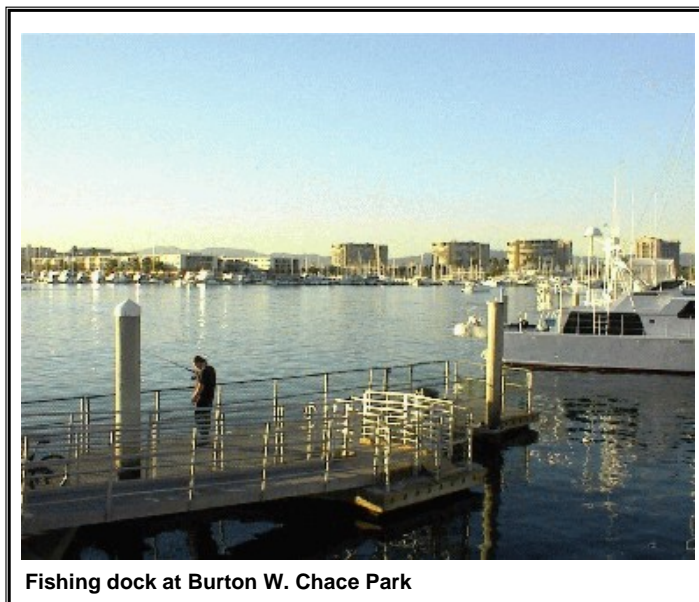
indicated that there are no suitable enclosed harbors available with no anthropogenic impact. An alternative procedure for computing exceedance days without a reference harbor has been proposed by the LARWQCB, called Natural Source Exclusion. In this procedure, any exceedances occurring after elimination of anthropogenic input would be allowed. LARWQCB should encourage SCCWRP to pursue studying this alternative method so that WLAs can be correctly calculated and applied.

4.5.5 Epidemiological Study For Beaches Not Impacted by Sewage Contamination

The recent study of Mission Bay indicated that there was no correlation between bacterial counts and illness of beachgoers. The difference between that study and the Santa Monica Bay Epidemiological Study was that there were no sewage spills or leaks discharging to Mission Bay, while Santa Monica Bay experienced input of sewage from spills or leaks. It would be extremely valuable to do a larger scale epidemiological study for Southern California beaches where there are no human inputs, in order to confirm that high coliform counts without the presence of sewage are not harmful to human health. A study of this type is extremely expensive, and would require cost sharing among all interested cities along the coast.

4.5.6 Marina del Rey Watershed Boundary Study

As noted during some of the MDRWRA meetings, there was some discussion on the official watershed boundaries from the LARWQCB. There seems to be some questions of the tributary area to the Marina Ditch. The Marina Ditch outlets into the south side back of Basin H. It is currently unclear if or how much of Ballona Wetlands and Marina Expressway are tributary to the Marina Ditch. A study should be performed using record information and new survey as necessary, to determine these contributory areas and adjust the watershed boundary accordingly.



4.5.7 Other

While the MDRWRA have attempted to describe the studies expected to be needed in the near future to achieve compliance, it is understood that several things may require additional studies beyond what is currently foreseen and what may arise out of the

current efforts. Technology typically allows for easier, faster, and more cost-effective measurement and evaluation. Larger, more comprehensive studies may cause re-evaluation of current theory, thinking, and practices. Unforeseen factors may come into play.

4.6 Monitoring

Monitoring is expected to be a key component of the implementation plan because it provides the MDRWRA with the information to successfully meet the water quality objectives of the TMDL. The monitoring data and the resulting analysis will form one part of the basis for the iterative adaptive approach and the decisions made to revise the selected implementation measures.

4.6.1 Baseline and Effectiveness

The first step in evaluating water quality improvement program effectiveness is to establish a baseline. The procedure is generally to research the existing data and locations, determine the quality/usability, identify data gaps, and develop a program to obtain the additional data and/or resample existing locations.

There is existing water quality data for certain locations within the MdRH back basins and Marina Beach; these have been collected by the LACDBH over the last two decades. More data will be collected starting November 2005, when the MDRWRA begin implementing its CMP, which includes compliance and ambient water quality monitoring.

Once the baseline is established, then as implementation solutions are completed, the new data from compliance monitoring can be compared to analyze improvements effectiveness. This analysis, together with the cost analysis, is the two key tools in the iterative adaptive approach.

4.6.2 Analysis and Reporting

Large volumes of monitoring data are expected to be generated from compliance monitoring and ambient monitoring. Also, structural BMP performance evaluation may also generate significant data. Data need to be collected, analyzed, and reported in a consistent way so that all the MDRWRA can use it.

4.7 Estimated Implementation Costs

The estimate costs for the Low-Flow Storm Drain Diversion Program are easy to develop based on past experience and they are presented below. However, the costs associated with the remainder of the implementation plan are less easily quantified at this time, but cost range estimates are provided where possible. These costs will be refined and evaluated as the plan is implemented.

The cooperative aspect of the MDRWRA should allow flexibility in implementing and funding the different compliance programs. For example, if one of the responsible agencies is unable to implement an Institutional Controls Program, Sub-Regional Structural BMP Program, and/or PIPP, they may choose to contribute funding and/or in-kind services to the other responsible agencies.

The MDRWRA expect to expend significant funds to achieve TMDL compliance. These costs include:

- ✓ Analyzing data and prepare reports
- ✓ Developing more detailed plans for the Institutional Control and Sub-regional Structural BMP Programs
- ✓ Increasing Public Information and Participation Program
- ✓ Monitoring, including program effectiveness, research, and structural BMP effectiveness
- ✓ Costs for each control project, including design, permitting, environmental documentation, and construction/installation
- ✓ Operation, maintenance, replacement, and upgrade
- ✓ Other

The dollar figures presented in this section are in 2005 dollar value, and do not include inflation adjustment.

4.7.1 Non-Storm Water Discharge Controls

The Non-Storm Water Discharge Controls projects estimated costs are estimated to be approximately \$6M as listed below:

Program	Estimated Cost Range (in million)
❖ Low-Flow Storm Drain Diversion Program	\$2.76M (one time capital cost)
✓ Sewer Service Charge*	\$0.035M per year for 16 years
✓ Operation and Maintenance	\$0.1M per year for 16 years
❖ Marina Beach Water Quality Improvement Project	\$2M (one time capital cost)
✓ Increase Basin D Circulation	
❖ Marina Source ID and Control Program	\$0.4M per year for 10 years

*The dollar figure was provided by City of Los Angeles, based on JG2/3 LFD's.

4.7.2 Institutional Controls

The expected cost per responsible agency per year is unknown at this time. Costs are expected to be relatively modest for the responsible agencies that have small percentages of the watershed area (assuming that the cost sharing will be based on the percentage land each agency contributes) and much higher for the responsible agencies with large percentages of land area.

The MDRWRA are estimating an average range of \$0.1M to \$0.5M per year over the implementation phase. In the first few years of the plan implementation, costs are expected to be lower as the agencies evaluate the existing programs. Most of these initial costs are expected to be administrative. There are thirteen institutional control categories listed in Table 4.3. Each of these categories will require agency staff time to investigate and formulate enhancement recommendations to take to the implementation plan sub-group.

4.7.3 Public Information and Participation Program

The expected cost per responsible agency per year is unknown at this time. Costs are expected to be relatively modest for the responsible agencies that have small percentages of the watershed area (assuming that the cost sharing will be based on the percentage land each agency contributes) and much higher for the responsible agencies with large percentages of land area. The MDRWRA are initially estimating \$0.25M per year.

The Public Information and Participation Program has many common elements and themes with the other implementation efforts for the Santa Monica Bay Beaches Bacteria TMDL implementation. MDRWRA recognize the efficiency associated with coordinating a Santa Monica Bay wide plan and may meet with the other implementation groups to combine resources. One possibility is a bay-wide or a county-wide plan for coordinated PIPP with each watershed having specific action items.

4.7.4 Sub-Regional Structural BMP Program

Currently, there are only a few examples of Sub-Regional Solutions on which to base cost estimates. The Open Charter School Project by the Los Angeles Unified School District/Tree People and Broadus Elementary School can be used for preliminary numbers. Based on these projects and the nature of the expected projects, the current estimate is between approximately \$0.5 million and \$1 million dollars per site. These figures can go up depending on the volume and constituents treated per site. There are seven potential sites currently identified to study for implementing the sub-regional controls. Costs include:

- ✓ Planning (5%)
- ✓ Permitting (5%)

- ✓ Environmental documents (10%)
- ✓ Design (20%)
- ✓ Construction, including construction contract administration (15%)
- ✓ Project management and administration (5%)

Costs in parentheses () are percentages of the construction costs.

Operation and maintenance costs are currently estimated to be approximately 5% of the construction cost per year, or \$25K to \$50K per site, per year.

4.7.5 Total Estimated Implementation Costs

The total estimated costs to implement the plan over the expected 16 years ranges from \$53M to \$60M and is broken down as follows:

Program	Estimated Cost Range (in million)
❖ Institutional Control Program	\$0.1M to \$0.5M per year
✓ 13 program elements	
❖ Public Information and Participation Program	\$0.1M to \$0.25M per year
❖ Non-Storm Water Discharge Controls Program (capital cost)	
✓ Low-Flow Storm Drain Diversion Program	\$2.76M (one time capital cost)
✓ Marina WQ Improvement Project (Circulation)	\$2M (one time capital cost)
✓ Marina Source ID and Control	\$0.4M per year
❖ Storm Water Discharge Controls Program (capital cost)	
✓ Marina WQ Improvement Project (Diversion)	\$1.2M (one time capital cost)
✓ Sub-regional Structural BMP Projects	\$1M to \$2M per site at 7 sites
✓ Regional Structural BMP Program	\$20M

- ❑ Institutional Control Program: \$8M to \$9M
- ❑ Public Information and Participation Program: \$4M to \$5M
- ❑ Non-Storm Water Discharge Controls: \$9M
- ❑ Sub-Regional Structural BMP Program: \$10M to \$15M
- ❑ Regional Structural BMP Program: \$20M

SECTION 4 PROPOSED IMPLEMENTATION PLAN



Table 4.5 Summary of the Proposed Implementation Programs

Priority Sub-watershed	Impaired Back Basin	Programs	Responsible Agency				Commitment Level *			Proposed Implementation Schedule																	
			LA County	LA City	Culver City	Caltrans	Initiate	Pilot/Test	Evaluate	FY05/06	FY06/07	FY07/08	FY08/09	FY09/10	FY10/11	FY11/12	FY12/13	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	
4	Basin E	PIPP **																									
		Inter-Agency Coordination	X	X	X		X																				
		Industry-Specific BMP Outreach	X	X	X		X																				
		Advertising	X	X	X		X																				
		Media Relations	X	X	X		X																				
		Pollutant-Specific Outreach	X	X	X		X																				
		School Outreach	X	X			X																				
		Adopt-a-Highway Program				X	X																				
		Institutional Control Program **																									
		Storm Drain System Management	X	X	X	X	X																				
		Proper Pet Waste Disposal	X	X	X		X																				
		Sanitary System Management Program	X	X	X		X																				
		Illicit Connection/Illicit Discharge	X	X	X	X	X																				
		Street Infrastructure Management	X	X	X		X																				
		Recreational and Other Public Facilities Management					X																				
		Public Parking Facilities Management	X	X	X		X																				
		Industry/Commercial Facilities Control Program	X	X	X		X																				
		Code and Ordinance Review Program	X	X	X		X																				
		Special/Holiday Events	X	X	X		X																				
		Business Improvement Districts	X	X	X		X																				
Structural BMP Program																											
Low-Flow Storm Drain Diversion Program	X				X																						
<i>Sub-regional Structural BMP Program</i>																											
Venice Boulevard					X			X																			
Regional Solution	X	X	X	X			X																				
3	Basin E	PIPP																									
		Inter-Agency Coordination	X	X	X		X																				
		Industry-Specific BMP Outreach	X	X	X		X																				
		Advertising	X	X	X		X																				
		Media Relations	X	X	X		X																				
		Pollutant-Specific Outreach	X	X	X		X																				
		Adopt-a-Highway Program				X	X																				
		Institutional Control Program																									
		Storm Drain System Management	X	X	X	X	X																				
		Proper Pet Waste Disposal	X	X	X		X																				
		Sanitary System Management Program	X	X	X		X																				
		Illicit Connection/Illicit Discharge	X	X	X	X	X																				
		Street Infrastructure Management	X	X	X		X																				
		Recreational and Other Public Facilities Management					X																				
		Public Parking Facilities Management	X	X	X		X																				
		Industry/Commercial Facilities Control Program	X	X	X		X																				
		Code and Ordinance Review Program	X	X	X		X																				
		Special/Holiday Events	X	X	X		X																				
		Business Improvement Districts	X	X	X		X																				
		Structural BMP Program																									
Low-Flow Storm Drain Diversion Program					X																						
Regional Solution							X																				

SECTION 4 PROPOSED IMPLEMENTATION PLAN



Priority Sub-watershed	Impaired Back Basin	Programs	Responsible Agency				Commitment Level *			Proposed Implementation Schedule																	
			LA County	LA City	Culver City	Caltrans	Initiate	Pilot/Test	Evaluate	FY05/06	FY06/07	FY07/08	FY08/09	FY09/10	FY10/11	FY11/12	FY12/13	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	
1A	Basin D, E, & F	PIPP																									
		Inter-Agency Coordination	X	X	X		X																				
		Industry-Specific BMP Outreach	X	X	X		X																				
		Advertising	X	X	X		X																				
		Media Relations	X	X	X		X																				
		Pollutant-Specific Outreach	X	X	X		X																				
		Adopt-a-Highway Program				X	X																				
		Institutional Control Program																									
		Storm Drain System Management	X	X	X	X	X																				
		Proper Pet Waste Disposal	X	X	X		X																				
		Sanitary System Management Program	X	X	X		X																				
		Illicit Connection/Illicit Discharge	X	X	X	X	X																				
		Street Infrastructure Management	X	X	X		X																				
		Recreational and Other Public Facilities Management	X	X	X		X																				
		Public Parking Facilities Management	X	X	X		X																				
		Boating Facilities Management	X				X																				
		Industry/Commercial Facilities Control Program	X	X	X		X																				
		Code and Ordinance Review Program	X	X	X		X																				
		Special/Holiday Events	X	X	X		X																				
		Business Improvement Districts	X	X	X		X																				
		Structural BMP Program																									
		Marina Source Identification and Control	X	X	X	X	X																				
		Marina Beach Water Quality Improvement Project	X				X																				
		Sub-regional Structural BMP Program					X																				
		Beaches & Harbor Parking Lot 5 (next to the Basin F)	X	X	X	X	X																				
		Beaches & Harbor Parking Lot 7 (next to Admiralty Park)	X	X	X	X	X																				
Admiralty Park	X	X	X	X																							
Admiralty Way Widening	X	X	X	X																							
LA County Fire Station	X	X	X	X																							
Marina del Rey Library	X	X	X	X																							

Note:

* The PIPP, the Institutional Control Program, and the Sub-regional Structural BMP Program are committed to initiated, pilot, or evaluate by some or all of the responsible agencies; however, the commitment level for each specific proposed action item in the three programs will be carried out differently by each responsible agency. Refer Table 4.1, 4.3, and 4.4.3 regarding each responsible agency's commitment level on the specific proposed action items in the three programs.

** Most of the PIPP and Institutional Control Program proposed categories will be initiated either in Phase I or Phase II and will be continued throughout the implementation cycle.

5.1 TMDL Schedules and Milestones

This section recaps the significant dates and deadlines from the TMDL and the implementation plan.

The required TMDL deliverables are:

Date	Deliverable
July 16, 2004	Compliance Monitoring Plan
July 16, 2004	Small Drain Study
July 16, 2004	Beaches and Harbors Discharge Report
Draft-March 30, 2005 Final-July 30/October 31, 2005	Implementation Plan
March 18, 2007	Non-point Source Study

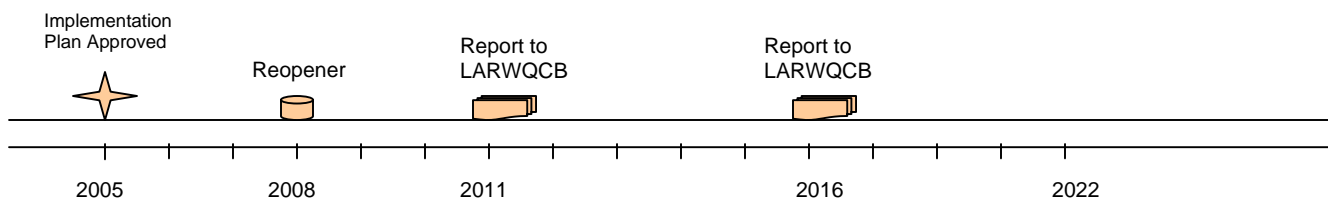
The following are the TMDL key milestone dates:

- ✓ TMDL effective date: March 18, 2004
- ✓ Dry-weather compliance: March 18, 2007
- ✓ TMDL reopener: March 18, 2008
- ✓ Wet-weather compliance: 10 or 18 years after the effective date (March 18, 2014, to March 18, 2022)

The proposed implementation schedule is as follows:

- ❖ Proposed Dry-Weather TMDL Implementation Schedule
 - Phase I
 - Low-Flow Storm Drain Diversion Program, 2004 - March 18, 2007
 - Marina Beach Water Quality Improvement Project (Increase Basin D Circulation), 2003 - December 2005
 - Marina Source Identification and Control Program, 2005 – March 18, 2007

- ❖ Proposed Wet-Weather TMDL Implementation Schedule
 - Institutional Control Program, Public Information and Participation Program, Marina Beach Water Quality Improvement Project (Sheet Flow Diversion), and Sub-Regional Structural BMP Program
 - Phase I: FY 2005 -06 – FY 2006-07
 - Phase II: FY 2007-08 – FY 2011-12
 - Phase III: FY 2012-13 – FY 2016-17
 - Phase IV: FY 2017-18 – FY 2021-22



- Regional Structural BMP Program (will initiate investigation in Phase I)

5.2 Natural Disasters, Human Acts, and Fiscal Crisis

Southern California is subject to periodic catastrophic/extraordinary events that cause significant damage to the infrastructure, economy, and human welfare. Examples of these are, but not limited to:

- ✓ Natural disasters such as fires, floods, earthquakes, tsunamis, landslides, etc.
- ✓ Human acts such as terrorism, riots, war.
- ✓ Fiscal crisis at the local, state, and federal levels.

It is recognized that these events are beyond the control of the MDRWRA. It is expected that the LARWQCB will work with the MDRWRA by allowing modifications of the timelines and actions in this plan to compensate for resource issues incurred by the MDRWRA responding to these catastrophic/extraordinary events.

California Regional Water Quality Control Board Los Angeles Region, "Order No. 01-182 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharge Within the County of Los Angeles, and the Incorporated Cities therein, except the City of Long Beach," December 31, 2001.

California Regional Water Quality Control Board Los Angeles Region, "Total Maximum Daily Load to Reduce Bacteria Indicator Densities at Marina Del Rey Harbor Marina Beach and Back Basins," September 4, 2003

CH:CDM, "Santa Monica Bay Beaches Bacteria Total Maximum Daily Load Implementation Plan for Jurisdictional Groups 2 and 3," First Draft, February 1, 2005.

Edward D. Schroeder, W. Michanel Stallard, Donald E. Thompson, Frank J. Loge, Marc A. Deshussess, Huub H. J. Cox, Center for Environmental and Water Resources Engineering Department of Civil & Environmental Engineering University of California, Davis, "Management of Pathogens Associated with Storm Drain Discharge, A Report Prepared for the Division of Environmental Analysis California Department of Transportation Interagency Agreement No. 43A0073," May 2002.

City of San Diego, MEC Analytical Systems, "Mission Bay Clean Beaches Initiative Bacterial Source Identification Study", September 14, 2004.

City of Los Angeles, Meeting minutes from IRP Steering Group Workshop No. 6, July 24, 2003.

Allowable Exceedance Days: Number of days allowed to exceed the sample bacteria objectives.

Bacterial Indicators: Total coliform, fecal coliform, the fecal-to-total coliform ratio, and enterococcus are used in the Basin Plan as indicators of the likely presence of disease-causing pathogens in surface waters.

Baseline: The existing condition, existing level of, starting point

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 LARWQCB on June 13, 1994 and subsequent amendments.

Beneficial Reuse: Multiuse projects that incorporate multiple benefits such as flood protection, aesthetics, habitat protection, parks, and open space.

Beneficial Uses: The existing or potential uses of receiving waters in the permit area as designated by the LARWQCB in the Basin Plan.

B-roll: Videotaped footage that is not included in the final edited version of a company's video news release (VNR). B-roll is given to television stations along with the VNR to give the stations the option of putting together their own version of the story, giving more time to aspects the station feels will be of particular interest to their viewers.

End-of-Pipe: Refers to the outlet of a drainage system. Usually associated with BMPs and/or large scale treatment plants.

Hot Spot: An area where high levels of a pollutant exist or are believed to exist.

Institutional Control Measures: Non-structural Best Management Practices design to prevent or minimize pollutants of concern from entering urban runoff and stormwater and ending up in the receiving water bodies.

Sub-Regional Structural BMPs: Structural Best Management Practices that intend to treat sites with only minor contributions from adjoining streets and/or property.

Low Flow Diversion: Installation of facilities to provide capture and storage of dry-weather runoff and divert the stored runoff to the wastewater collection system for treatment at the City of Los Angeles' Hyperion Treatment Plant during low flow conditions at the plant.

Main Channel: The Marina del Rey Harbor Main Entrance Channel from the Santa Monica Bay connecting the 8 main basins.

Manhole: A covered shaft in the ground to permit access to a storm drain or other underground structure.

Marketing collateral: The collection of social marketing media used to support the PIPP campaign.

Media outlet: The various mass media that can be employed to carry advertising messages to potential audiences or target markets for products, services, organizations, or ideas. These media include newspapers, magazines, direct mail advertising, Yellow Pages, radio, broadcast television, cable television, outdoor advertising, transit advertising, and specialty advertising.

Mole Road: The streets running the length of the land between the basins

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, alleys, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) owned by a State, city, county, town or other public body, that is designed or used for collecting or conveying storm water, which is not a combined sewer, and which is not part of a publicly owned treatment works, and which discharges to Waters of the United States.

Permittee(s): Agencies named in the MS4 NPDES Permit as being responsible for permit condition within its jurisdiction.

Premium: An item of value given as an additional incentive for a call to action.

Principal Permittee: The Los Angeles County Flood Control District is designated by the LARWQCB in the MS4 NPDES Permit as the Principal Permittee.

Receiving Waters: All surface water bodies in the Los Angeles Region that are identified in the Basin Plan.

Reopener: This TMDL is scheduled to be re-considered in four years from the effective date: to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacteria indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; and to re-evaluate year used in the calculation of allowable exceedance days.

Responsible Jurisdiction/Responsible Agencies: (1) Local agencies that are Permittees or Co-Permittees on the MS4 NPDES Permit, (2) Local or state agencies that have jurisdiction over Marina Beach or the back basins of MdRH, and (3) the California Department of Transportation pursuant to its storm water permit.

Role playing: Activity in which participants take on characteristics and/or perform actions according to directions for the activity, with the purpose of skill building, usually in the relational development area.

Sheet Flow: Any form of unconfined flow occurs over a broad area.

Social marketing: The application of commercial marketing concepts and tools to programs designed to influence voluntary behavior of target audiences where the primary objective is to improve the welfare of the target audiences and/or the society of which they are a part.

Structural BMP: Structural facility designed and constructed to mitigate the adverse impacts of stormwater and urban runoff pollution.

Summer Dry Weather: Days from April 1 to October 31.

Total Maximum Daily Load (TMDL): Sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background.

Training module: A unit of instruction, usually designed for the achievement of one learning objective. A lesson may be made up of a number of modules.

VNR: (Video News Release) A publicity device designed to look and sound like a television news story. The agency prepares a 60- to 90-second news release on videotape, which can then be used by television stations as is or after further editing.

Waste Load Allocations (WLAs): The TMDL's WLAs are expressed as allowable exceedance days or the maximum number of days where sampling results can surpass the established Assembly Bill 411 standards without exceeding the limits in the TMDL.

Wet Weather: Days with 0.1 inch or greater of rainfall and the three days following the rain event.

Winter Dry Weather: Dry days from November 1 to March 31.

