ADAPTIVE MANAGEMENT REPORT

for the Beach Cities Enhanced Watershed Management Plan

Submitted to:
Los Angeles Regional Water Quality Control Board

Submitted by:
Beach Cities EWMP Group

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TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

1 INTRODUCTION

Following adoption of the 2012 Los Angeles Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit[1] (Permit), the Cities of Hermosa Beach, Manhattan Beach, Redondo Beach, and Torrance, together with the Los Angeles County Flood Control District (LACFCD), collectively referred to as the Beach Cities Watershed Management Group (Beach Cities WMG), agreed to collaborate on the development of an Enhanced Watershed Management Program (EWMP) for the Santa Monica Bay (SMB) and Dominguez Channel areas within their jurisdictions (referred to herein as the Beach Cities EWMP Area). Figure 1-1 is a map of the Beach Cities EWMP Area.

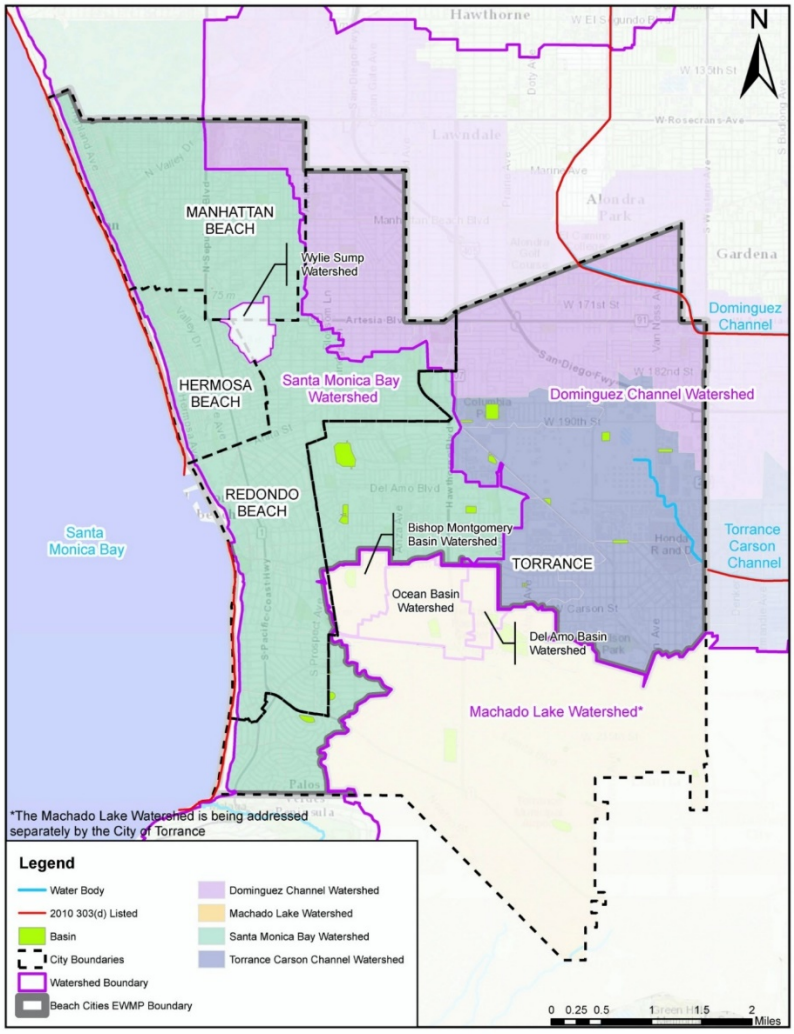

Figure 1-1. Beach Cities EWMP Area

[1] Order No. R4-2012-0175 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach MS4.

Following submittal of the draft EWMP to the Los Angeles Regional Water Quality Control Board (Regional Board) in June 2015 and two rounds of revision to incorporate Regional Board comments, the Final EWMP was approved in April 2016.

As outlined in the Permit, the Beach Cities WMG is required to implement an adaptive management process every two years, starting from the date of EWMP approval. The adaptive management process serves as a means to comprehensively evaluate the EWMP and evaluate progress toward achieving:

- Applicable WQBELs/RWLs;
- Improved water quality in MS4 discharges and receiving waters;
- Interim milestones; and
- Multi-year efforts that were not completed in the current year and will continue into the subsequent year(s), among other requirements.

This report has been drafted by the Beach Cities WMG to satisfy the requirement of the Permit adaptive management process. A separate Adaptive Management Report is being prepared for the Machado Lake Subwatershed by the City of Torrance.

2 PROGRESS TOWARD ACHIEVING IMPROVED WATER QUALITY

The Beach Cities EWMP was drafted to facilitate effective, watershed-specific Permit implementation strategies in accordance with Permit Part VI.C. It summarizes the SMB and Dominguez Channel-specific water quality priorities identified jointly by the Beach Cities WMG; outlines the program plan, including specific strategies, control measures, and best management practices (BMPs) necessary to achieve water quality targets (Water Quality-Based Effluent Limitations [WQBELs] and Receiving Water Limitations [RWLs]); and describes the quantitative analyses completed to support target achievement and Permit compliance.

This section summarizes control measures implemented to-date within the Beach Cities EWMP Area and assesses progress toward achieving improved water quality based on the implementation of these control measures and water quality monitoring results.

2.1 CONTROL MEASURES IMPLEMENTED

In an effort to achieve water quality targets, the Beach Cities EWMP relies on a combination of customized minimum control measures (MCMs); enhanced non-structural control measures; and structural control measures, including regional and distributed BMPs. This subsection summarizes control measures that have been implemented since the drafting of the EWMP.

2.1.1 MINIMUM CONTROL MEASURES AND NON-STRUCTURAL CONTROL MEASURES

Customized MCMs and non-structural control measures are implemented to address high-priority water quality issues within the Beach Cities watersheds. These control measures have been enhanced beyond the minimum MS4 Permit requirements and designed to target sources and pollutants of concern for the Beach Cities WMG such as bacteria, trash, sediment-borne metals and legacy toxic pollutants (DDT and PCBs), and PAHs. Detailed descriptions of customized MCM and non-structural pollutant control efforts are included in the Beach Cities EWMP Section 2.6.2 and Appendix L and the current status of each control measure is summarized in Section 2.6 of the Beach Cities Watershed Annual Report[2].

Targeted Outreach

The Beach Cities WMG has worked collaboratively with the Peninsula WMG over the last two years to develop joint outreach materials targeted at sources determined by the WMGs to be potential generators of pollutants to the MS4. These materials include: (1) a customized construction BMP brochure for sites less than one acre in disturbed area that addresses sediment-borne pollutants such as metals and legacy toxics; (2) Sustainable Gardening and Landscaping and Integrated Pest Management (IPM) webpages for residential landscapers and gardeners that address bacteria and sediment-borne pollutants such as metals and legacy toxics as well as nutrients; and (3) a BMP tip card targeted at mobile businesses that generate waste water (e.g., mobile auto detailers, window washers, and dog groomers) that addresses bacteria and metals, as well as nutrients. To address pet waste, one source of indicator bacteria throughout the Beach Cities WMG, each of the agencies

[2] Agency-specific MCM enhancements are detailed in each agency's individual Annual Report.

equips its municipal parks and heavily utilized pedestrian areas with pet waste collection stations that serve as a behavior change catalyst for pet owners as well as a means of reducing pollutant loading.

The Beach Cities WMG has also established a partnership with and leverages the work done by the South Bay Environmental Services Center (SBESC) to conduct outreach to a broad audience regarding stormwater pollution prevention and water conservation, as well as broadcast opportunities to get involved in clean up events or attend workshops. Examples of SBESC programs that have been promoted by the Beach Cities to-date include: West Basin Municipal Water District's Rain Barrel Giveaway Program and Lunch & Learn Classes, Water Replenishment District of Southern California's Eco Gardener Series, Rainwater/Greywater Classes and workshops, Turf Removal Classes and Landscape Irrigation Efficiency Programs, Household Hazardous Waste Collection Events, Go Green Financing, and Zero Waste Workshops.

Enhanced Commercial Facility Inspections

The Beach Cities WMG agencies implement the Clean Bay Restaurant program, an enhancement to the Commercial Facility Control Program MCM that addresses the priority pollutants bacteria, trash, and metals, as well as oil and grease and nutrients. The Clean Bay Restaurant Program consists of annual inspections of food service establishments utilizing a comprehensive 49-point stormwater inspection checklist that requires 100% compliance in order for the food service establishment to be awarded a Clean Bay Restaurant Certification by The Bay Foundation. This checklist far exceeds the minimum requirements of the 2012 LA MS4 Permit, as does the annual frequency of inspection.

Enhanced Public Agency Activities

City streets throughout the Beach Cities WMG are swept on a weekly basis, in combination with posting of streets with "no parking" signs on street sweeping days to maximize collection of trash and debris - high priority pollutants.

In addition, each of the Beach Cities WMG agencies participates in the Used Oil and Household Hazardous Waste Program (Used Oil Program), which encourages recycling of used lubricating oil in order to decrease its illegal disposal/dumping which can be a source of PAHs to the environment.

Illicit Discharge Control

In addition to the MCM enhancements, many of which are aimed at reducing non-stormwater flows, each of the Beach Cities implements a robust Illicit Discharge Detection and Elimination Program (IDDE Program) and Sanitary Sewer Management Plan (SSMP). Together, the IDDE Program and SSMP include spill response, sanitary sewer preventative maintenance, sewer overflow prevention, illicit discharge detection and investigation, and progressive enforcement to eliminate the source of illicit non-stormwater flows.

To identify outfalls with significant non-stormwater discharges, 94 major outfalls within the Beach Cities WMG area were screened between May 2015 and September 2016 (40 outfalls in Dominguez

Channel and 54 outfalls along the coast of Santa Monica Bay). Five additional non-major outfalls were also screened in the Santa Monica Bay Watershed due to the importance of recreational water quality at the Santa Monica Bay Beaches. Two major outfalls were identified as having significant non-stormwater discharge in the Santa Monica Bay watershed and four major outfalls were identified as having significant non-stormwater discharge in the Dominguez Channel watershed. All of these outfalls were investigated and two outfalls in the Dominguez Channel Watershed were found to have ongoing significant discharges attributed to irrigation runoff and were added to the Beach Cities Coordinated Integrated Monitoring Program (Beach Cities CIMP) dry weather monitoring to determine if they are causing or contributing to downstream receiving water exceedances.

The Beach Cities agencies also enforce water conservation and/or water efficient landscaping ordinances that prevent irrigation overspray and runoff. A discussion of the structural control measures operating to control non-stormwater discharges within the Beach Cities EWMP area can be found in Section 4.2 of the Beach Cities Watershed Annual Report.

2.1.2 Structural Control Measures

Table 2-1 summarizes the status of EWMP regional and distributed structural control measures that have been initiated since EWMP approval. Table 2-2 summarizes expected project milestones to be completed over the next two and a half years (by 2021). A more detailed description of the status of these projects and other multi-year efforts can be found in Section 2.6 of the Beach Cities Watershed Annual Report.

Table 2-1. Santa Monica Bay Structural BMP Milestones Through 2021

Project Description	EWMP Milestones	Project Implementation Status	Status of Funding*
Herondo Regional Infiltration Project[3]	Design Completed: 2019 Expected Project Completion: 2021	Preliminary design initiated - September 2017. Solicitation of community input on project design has revealed significant opposition to the selected project location. The Beach Cities WMG is currently investigating the possibility of siting the project in the vicinity of the alternate project location identified in the EWMP (in Redondo Beach on the south side of Herondo Street).	$3.1M in Prop 13 grant funds plus a $3.3M local match from tributary agencies per cost-share agreement in executed MOU
Manhattan Beach Infiltration Trench Project	Design Completed: 2019 Expected Project Completion: 2021	Planned project location on beach subject to the cost limitations placed on beach development by the State of California Department of Parks and Recreation deed granting ownership of the beach to LA County Beaches and Harbors in 1995. The lead agency (City of Manhattan Beach) has been working with LA County Beaches and Harbors to obtain approval from County Counsel to construct the proposed subsurface infiltration trench and has thus far received informal consent but is awaiting a more formal approval.	Funding source has not been identified
Hermosa Beach Infiltration Trench	To be initiated in 2019 following completion of preliminary design for upstream project. Expected Project Completion: 2021	The City of Hermosa Beach completed a multi-year Assessment of Infrastructure Vulnerability to Sea-Level-Rise in March 2016, which projected that the infiltrative capacity of a trench similar in concept to this project would be significantly reduced due to sea level rise. The scope and sizing of this project will depend on the Herondo Regional Infiltration Project siting and capacity as well as updated sea level rise projections.	Funding source has not been identified

[3] Formerly the Hermosa Greenbelt Infiltration Project.

Project Description	EWMP Milestones	Project Implementation Status	Status of Funding*
Redondo Beach Park #3 Infiltration	To be initiated in 2019 following completion of preliminary design for Herondo Regional Infiltration Project. Expected Project Completion: 2021	Since this project lies upstream, its scope will depend on the capacity of the downstream Herondo Storm Drain Infiltration project.	Funding source has not been identified
SMB 6-01 (Herondo Watershed) Distributed Green Streets Addressing 25% of Target Land Use Area	Funding and Design Completed: 2019 Expected Project Completion: 2021	Conceptual projects and locations identified for each agency.	Application submitted for Prop 12 grant funding and Prop 1 IRWM Implementation grant funding to address ¼ of the required area to be treated through green streets in the Herondo Watershed.
SMB 5-02 (28th Street Watershed) Distributed Green Streets Addressing 5% of Target Land Use Area	Funding and Design Completed: 2019 Expected Project Completion: 2021	Conceptual projects and locations identified.	Application submitted for Prop 12 grant funding and Prop 1 IRWM Implementation grant funding to address ½ of the required area to be treated through green streets in the 28th Street Watershed.
Distributed Trash Controls	RB/HB determination of compliance strategy for installing full capture trash systems.: August 20, 2018 RB/HB Installation of full capture trash systems serving 50% of the MS4 drainage area to Santa Monica Bay outside of Regional EWMP BMPs: March 20, 2019 MB determination of compliance strategy for installing full capture trash systems.: August 20, 2019	To-date, thirty-two (32) full capture connector pipe screens (CPS) and twelve (12) gross pollutant hydrodynamic separators and an additional 64 Automatic Retractable debris screens (ARS) have been installed throughout the Hermosa Beach, Redondo Beach, and Manhattan Beach Santa Monica Bay Watershed areas. The City of Torrance has substantially completed retrofit of its Santa Monica Bay watershed area through several recent grant funded projects. The Cities of Hermosa Beach and Redondo Beach have developed implementation strategies to achieve 100%	Each agency is separately funding trash controls within its jurisdiction

Project Description	EWMP Milestones	Project Implementation Status	Status of Funding*
	MB installation of full capture trash systems serving 50% of the MS4 drainage area to Santa Monica Bay outside of Regional EWMP BMPs: March 20, 2020 Hermosa Beach and Redondo Beach achieve 100% reduction in trash from baseline through the installation of full capture trash systems serving MS4 drainage area to Santa Monica Bay: March 20, 2020 Manhattan Beach achieves 100% reduction in trash from baseline through the installation of full capture trash systems serving MS4 drainage area to Santa Monica Bay: March 20, 2023	reduction of trash from the MS4 by March 20, 2020. These strategies are included as Appendices A and B.	

Table 2-2. Dominguez Channel Structural BMP Milestones Through 2020

Project Description	EWMP Milestone	Project Implementation Status	Status of Funding[1]
DC-RB/MB Distributed Green Streets Addressing 3% of Target Land Use Area	ID Potential Green Street Locations: December 2018 Funding and Design: 2019 City Council approval of Plans & Specifications: December 2019 Initiate Construction: 2020	The cities of Redondo Beach and Manhattan Beach have identified conceptual project locations for green streets to treat runoff from at least 3% of target land uses in the Dominguez Channel Watershed.	No funding source has been identified
Catch Basin Inlet Filters/Dry Wells in Torrance	Begin Installation: 2020	The City of Torrance is in the planning phase of the project.	To be funded by City of Torrance
Develop Concept Reports for Regional Projects in Redondo Beach and Manhattan Beach	December 2020	Not yet commenced	No funding source has been identified
Redondo Beach Powerline Easement[2]	Funding Phase: 2020	Not yet commenced	No funding source has been identified

[1] In the future, the Beach Cities WMG may receive Measure W funding under the LA County Safe Clean Water Program for the implementation of regional projects; however, LA County has stated this funding will not be available until spring 2020.
[2] Current regional BMP project sequencing in Dominguez Channel helps achieve dry weather bacteria TMDL compliance. If compliance is met through other means, regional BMP scheduling in Dominguez Channel may be pushed back so that regional projects are instead complete by March 2032.

2.1.3 LID Implementation

The Beach Cities agencies have been implementing the Planning and Land Development requirements of the MS4 Permit through their respective Low Impact Development (LID) ordinances. Table 2-3 below summarizes the new/redevelopment projects within the Beach Cities Area that have been conditioned for LID since July 2015 (when the Beach Cities RAA assumed the 2012 LA MS4 Permit post-construction requirements would go into effect). As shown in Table 2-3, a total of 138 new/redevelopment projects subject to LID have been completed since July 2015. These projects address 38.27 acres of the Beach Cities EWMP area out of a total of 15,217 acres. This amounts to 0.25% of the area addressed by LID over a 3-year period, or an annual rate of redevelopment subject to LID of 0.08%, which is less than the lower range modeled in the Beach Cities EWMP.[4] It should be noted that the RAA assumed 50% of redevelopment projects to be biofiltration and 50% to be bioretention; however, the actual ratio of 99% bioretention to 1% biofiltration projects is much higher, which may offset the lower rate of redevelopment with improved stormwater capture.

Table 2-3. Cumulative Summary of New/Redevelopment LID Projects Completed

Reporting Year	Projects that Retain Stormwater Completed	Area Addressed by Projects that Retain Stormwater [acres]	Projects Utilizing Alternative Compliance Completed	Area Addressed by Biofiltration Projects [acres]	Total Area Addressed by LID [acres]
2015-16	37	9.5	0	0	9.5
2016-17	53	20.17	1	2.035	22.21
2017-18	47	6.56	0	0	6.56
TOTAL	137	36.23	1	2.035	38.27

2.2 Achievement of Interim Milestones

Sections 4.1.1 and 4.1.2 of the approved Beach Cities EWMP detail the schedules and project sequencing necessary to meet interim and final compliance deadlines for the Santa Monica Bay and Dominguez Channel water body pollutant combinations, respectively.

2.2.1 Santa Monica Bay Watershed

As outlined in Section 4.1.1 of the Beach Cities EWMP, the interim compliance deadline for the SMBBB TMDL requires a 50% reduction in exceedance days at shoreline monitoring sites by July 2018 through a combination of existing regional BMPs, non-structural control measures including redevelopment, public retrofit incentives, non-MS4 parcels/areas NPDES Permit compliance, and

[4] The Beach Cities EWMP assumed annual redevelopment rates between 0.10% and 0.31% for residential redevelopment and between 0.15% and 0.79% for commercial land uses based on data for the greater Los Angeles region and City specific redevelopment data.

MCM enhancements. This combination of BMPs was also projected to prevent the degradation of water quality at the anti-degradation sites.

As described in Section 2.1.1 above, the Beach Cities WMG agencies have been implementing the nonstructural BMPs and MCM enhancements identified in the EWMP. The Beach Cities WMG agencies are also operating and maintaining the following completed regional BMPs:

- Manhattan Beach Greenbelt Infiltration project
- Hermosa Strand Infiltration Trench project
- Hermosa Avenue Infiltration Boxes
- Pier Avenue Improvement project
- Henrietta + Amie Basins
- Entradero Basin
- Alta Vista Park Diversion and Re-Use project
- Sapphire Infiltration project

As shown below in Table 2-4, these measures, in combination with the assumption of compliance for non-MS4 regulated parcels (i.e., Industrial General Permit sites and CalTrans parcels), were projected to achieve a 13.6% load reduction, which exceeds the 2018 interim target load reduction of 13%.

In addition, as described in Section 2.1.3, the Beach Cities WMG has been implementing redevelopment LID requirements; however, based on the lower-than-projected rates of redevelopment subject to LID, no interim load reduction for LID + Private Retrofits was accounted for in Table 2-4.

Table 2-4. Stormwater Control Measure Implementation

	EWMP Milestone	**Target Load Reduction (TLR) Assumed in RAA**					**Progress Toward TLR**
	Critical Condition % Target Load Reduction	Regional BMPs	Distributed Green Streets	LID + Private Retrofits	Caltrans and IGP	Non-Structural BMPs/MCM Enhancements	Critical Condition % Load Reduction
Interim Compliance Deadline (2018)	13%	9.6%	0%	0%	1.5%	2.5%	13.6%

2.2.2 Dominguez Channel Watershed

Section 4.1.2 of the approved Beach Cities EWMP details the schedules and project sequencing necessary to meet interim and final compliance deadlines for the Dominguez Channel water body pollutant combinations. As outlined in Section 4.1.2, the cities of Redondo Beach and Manhattan Beach are to have identified planned green street locations to treat runoff from 3% of target land use areas within the Dominguez Channel Watershed by December 2018 as an interim implementation action to meet the final wet weather indicator bacteria targets in the Dominguez

Channel. Conceptual project locations have been identified and figures identifying the locations have been developed to aid in obtaining grant funding.

2.3 Progress Toward TMDLs

The Beach Cities EWMP addresses the following TMDLs:

- Santa Monica Bay Beaches Bacteria (SMBBB) TMDL for Wet and Dry Weather;
- Santa Monica Bay Offshore/Nearshore dichloro-diphenyl-trichloroethanes (DDT) and polychlorinated biphenyls (PCBs) TMDL;
- Santa Monica Bay Offshore/Nearshore Debris TMDL; and
- Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxics and Metals TMDL (Dominguez Channel Toxics and Metals TMDL).

Progress toward achieving each of these TMDLs is discussed in the following subsections, including evaluation of interim milestones applicable for each TMDL.

2.3.1 SMBBB TMDL

As detailed in the Beach Cities EWMP, the dry weather compliance deadlines for the SMBBB TMDL are currently active. Through effective low flow diversions and other discharge detection and elimination practices, the Beach Cities WMG has eliminated MS4 discharges during dry weather in the Santa Monica Bay watershed area and is in compliance with the dry weather stipulations of the TMDL. The focus of the EWMP and RAA is therefore wet weather conditions in Santa Monica Bay.

Shoreline monitoring for the SMBBB TMDL has been taking place since 2005 under the Coordinated Shoreline Monitoring Plan. At the time the EWMP was initially drafted, data collected through the 2013 TMDL Year (November 2012-October 2013) was analyzed for inclusion in the EWMP. Data collected since that time are detailed in subsequent Beach Cities Annual Stormwater Reports. Figure 2-1 and Figure 2-2 provide a summary of single sample exceedances during wet weather for the five most recent TMDL Years. Of note, the most recent complete TMDL Year (November 2016 – October 2017) was the wettest of the five years shown, with the number of storm events ranging from 12 to 14 and the total precipitation ranging from 16.04 to 19.92 inches, depending on the rain gauge consulted. By comparison, during the 90th percentile TMDL year (November 1994 – October 1995) used in the Beach Cities RAA, 21.9 inches of rainfall were recorded at Manhattan Beach Gauge 373.

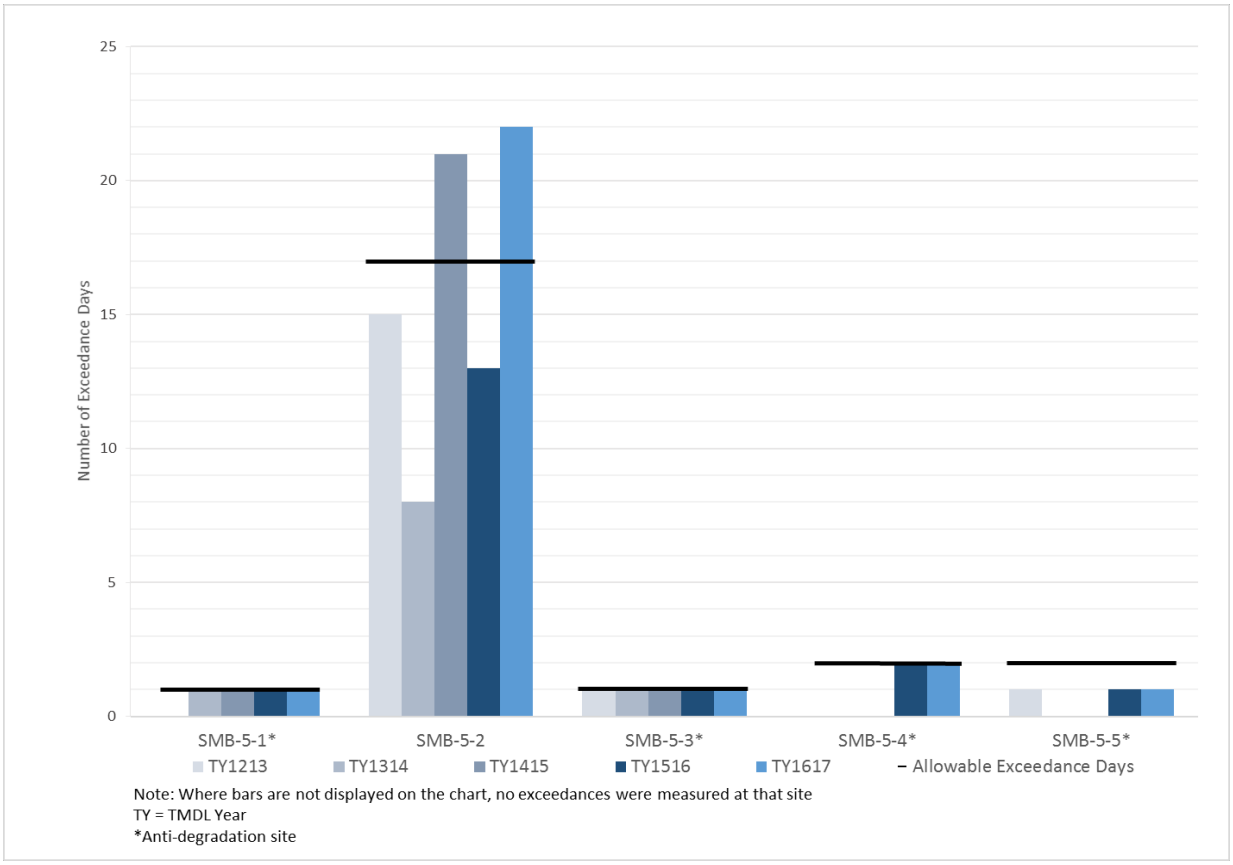

Figure 2-1. Wet Weather Single Sample Exceedance Results, Jurisdiction 5 (TMDL Years 2013 to 2017)

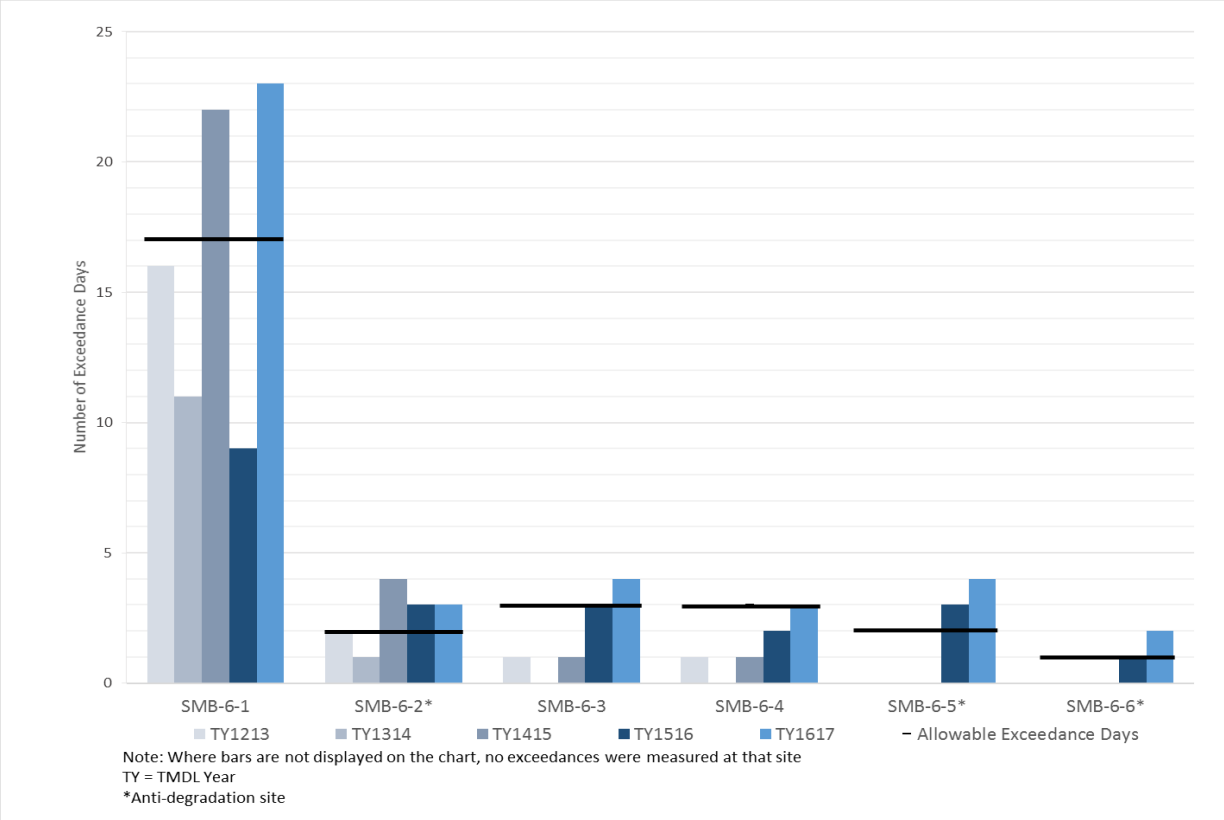

Figure 2-2. Wet Weather Single Sample Exceedance Results, Jurisdiction 6 (TMDL Years 2013 to 2017)

The graphs above demonstrate that the final wet weather single sample RWLs have been surpassed on various occasions over the past five years. However, since these limitations are not yet effective, these are not considered TMDL exceedances, and for SMB 5-2 and SMB 6-1, there are regional and distributed projects planned in the EWMP that are intended to address the final RWLs with reasonable assurance.

Interim TMDL milestones for the SMBBB TMDL are summarized in Table M-2 of the MS4 Permit. The grouped 50% reduction milestone from Table M-2 are 35 exceedance days and 34 exceedance days, beyond those allowed during wet weather for Jurisdictions 5 and 6, respectively. These targets for single sample bacteria RWL exceedances have been achieved at the grouped Jurisdiction 5 and Jurisdiction 6 monitoring sites consistently since 2013, as shown in Table 2-5.

Table 2-5. Equivalent Single Sample Exceedance Days Above Allowable[1]

Jurisdiction	2013	2014	2015	2016	2017	50% Reduction Allowance
5	0	0	4	0	5	35
6	0	0	4	5	31	34

[1] These days are calculated as the total number of single sample exceedance days above the allowable exceedance days at each daily monitoring site, plus five times the total number of single sample exceedance days above the allowable exceedance days at each weekly monitoring site.

In addition to the grouped reduction milestones, the Permit requires that there be no increase in exceedance days at the antidegradation sites during the implementation period above that estimated in the critical year as listed in Table M-4 of the MS4 Permit. The antidegradation sites SMB 5-1, SMB 5-3, SMB 5-4, and SMB 5-5 met this interim wet weather target. However, the antidegradation sites SMB 6-2, SMB 6-5, and SMB 6-6 exceeded the interim wet weather targets set for these sites. As a result, adaptive management measures may be needed in these watersheds to meet the final wet weather targets. Further discussion is provided in Section 3.1 below.

Outfall monitoring under the Beach Cities CIMP was initiated in 2016-2017, and to-date has resulted in six stormwater monitoring events spread across four Santa Monica Bay outfalls. The timeframe of this data is too brief to evaluate trends of bacteria loads from the MS4, particularly as coupled with receiving water data.

2.3.2 SMB TMDL FOR DDT AND PCBS

The Beach Cities EWMP points out that the USEPA TMDL for DDT and PCBs in Santa Monica Bay effectively implements an anti-degradation approach to set MS4 wasteload allocations (WLAs) to maintain and protect the receiving waters and meet water quality standards. As a result, the existing MS4 PCB and DDT loads from the Beach Cities EWMP Area were reasonably assumed to be in compliance with the applicable WLAs and a target load reduction of zero was set for PCBs and DDT.

As detailed in the Beach Cities' 2017 and 2018 Annual Watershed Reports, stormwater discharges to SMB sampled per the Beach Cities CIMP to-date have resulted in non-detects for DDT and PCBs. Therefore, outfall monitoring data has confirmed the assumptions of the EWMP related to DDT and PCB discharges to SMB from the Beach Cities WMG. Unless future monitoring data shows otherwise, it is currently assumed that the Beach Cities WMG is in compliance with the water quality standards set forth in the USEPA TMDL for DDT and PCBS in Santa Monica Bay.

2.3.3 SMB DEBRIS TMDL

To implement the SMB Debris TMDL, the Beach Cities WMG agencies originally planned to install trash exclusion devices in catch basins in a phased approach to meet each interim compliance deadline (20% load reduction per year between 2016 and 2019) as well as the final compliance deadline (100% load reduction in 2020)[5] as described in the TMDL and each respective agency's approved Trash Monitoring and Reporting Plan (TMRP). A summary of structural devices installed to-date is included in each agency's respective annual watershed report and tallied in Section 2.1.2 above.

The City of Torrance has substantially completed retrofit of its Santa Monica Bay watershed area through several recent grant funded projects. However, as set forth in an EWMP modification

[5] The final compliance deadline is March 20, 2020 for the cities of Redondo Beach, Hermosa Beach, and Torrance, and March 20, 2023 for the City of Manhattan Beach.

request to the Regional Board on December 14, 2017,[6] alternative compliance strategies have been initiated by the cities of Hermosa Beach, Redondo Beach, and Manhattan Beach to investigate the use of certified high-flow capacity devices within their tributary areas. In addition, the Beach Cities agencies are investigating incorporation of trash capture into planned multi-benefit treatment systems in regional EWMP BMPs and green street projects consistent with the new provisions of the Statewide Trash Amendments.

In accordance with the revised TMDL implementation schedule, the Cities of Redondo Beach and Hermosa Beach completed their compliance strategies by August 20, 2018. These compliance strategies are provided as Appendix A (Redondo Beach) and Appendix B (Hermosa Beach). The City of Manhattan Beach will complete their compliance strategy no later than August 20, 2019. Therefore, the Beach Cities WMG has met interim compliance milestones to-date and is on pace to meet the final milestone for achievement of 100% reduction in trash by 2020/2023.

2.3.4 Dominguez Channel Toxics TMDL

As detailed in the Beach Cities EWMP, the focus of this TMDL for the Beach Cities WMG is copper, lead, and zinc during wet weather. Per Section E.2 of Attachment N of the MS4 Permit, the applicable interim water quality-based effluent limitations for the Dominguez Channel and Torrance Lateral, which became effective concurrent with the MS4 Permit, are as follows:

- Total Copper: 207.51 ug/L
- Total Lead: 122.88 ug/L
- Total Zinc: 898.87 ug/L

As detailed in the Beach Cities' 2017 and 2018 Annual Watershed Reports, stormwater discharges to Dominguez Channel sampled per the Beach Cities CIMP to-date have been lower than these interim limits by a substantial margin. These data are summarized in Table 2-6 below.

Table 2-6. Stormwater Outfall Monitoring Results – Metals in DC Watershed

Outfall Monitoring Location	Pollutant (ug/L)	11/21/16	12/16/16	01/09/17	01/09/18	03/11/18	03/22/18
OF-BCEG-5	Total Copper				37.8	25.4	29.6
	Total Lead				9.89	1.53	6.17
	Total Zinc				244	150	169
OF-BCEG-6	Total Copper	21.3	25.3	15.4			
	Total Lead	1.54	2.72	3.91			
	Total Zinc	177	160	185			
OF-BCEG-7	Total Copper	10.6	14.0	10.3	20.3	13.1	26.0
	Total Lead	1.61	2.84	3.58	7.81	1.57	6.45
	Total Zinc	73.5	131	168	170	96.4	208

[6] This request was subsequently approved by the Regional Board on February 6, 2018. A revised EWMP incorporating these modifications was submitted to the Regional Board in March 2018.

Final wet weather WQBELs for MS4 discharges in the aggregate to the Dominguez Channel are mass-based, expressed in grams per day, for total copper, lead, and zinc. Final wet weather WQBELs for Torrance Lateral are concentration-based WQBELs in the sediment discharged to the Torrance Lateral, expressed in mg/kg on a dry basis. However, as described in the TMDL, compliance with the freshwater metals allocations for Dominguez Channel and Torrance Lateral may be demonstrated via any one of three different means:

a. Final allocations are met;
b. CTR total metals criteria are met instream;
c. CTR total metals criteria are met in the discharge.

Several additional years of data are needed to assess progress toward attainment of the final wet weather WQBELs. Through the implementation of control measures detailed in the approved EWMP, the Beach Cities WMG is aiming to comply with the final receiving water limitations when they become effective in 2032.

2.4 Control Measure Effectiveness

Currently, the Beach Cities WMG does not have project-specific water quality data to analyze control measure performance compared with RAA assumptions. However, as discussed above, SMBBB TMDL shoreline monitoring data indicate that the current implementation of MCMs has not been effective in ensuring that the anti-degradation sites in Jurisdiction 6 do not degrade. Therefore, changes to these MCMs and/or the addition of new structural control measures may be required to meet the final wet weather targets. Proposed EWMP modifications as a result of these observations are discussed in Section 3 following.

As discussed in Section 2.1.3, the initial LID implementation rates achieved by the WMG are lower than the rates assumed in the EWMP. Since these rates have only been observed over a short timeframe (i.e., three years), no changes at this time are proposed to the EWMP based on this small sample size. However, after two more years of data collection, alterations to the LID implementation rates assumed in the RAA may be made based on all available data.

3 EWMP MODIFICATIONS

The following modifications to the EWMP are proposed based on data and information collected to-date.

3.1 CHANGES TO CONTROL MEASURES

Section 3.6.4 of the approved Beach Cities EWMP details the City of Torrance's proposal to install approximately 200 catch basin inlet filters within the Dominguez Channel Watershed portion of their City to address the metals WQBELs in the Dominguez Channel Toxics TMDL. Having investigated this matter further, the City of Torrance would like to add modular wetlands and infiltration drywells (or similar) to the possible control structures that could be installed at these catch basins. Because drywells fully infiltrate all captured water, they are effective at reducing all pollutant loads associated with the captured runoff, including additional WBPCs such as bacteria. They also are useful at reducing or eliminating dry weather runoff, thereby providing added benefit to the watershed. Although infiltration is generally not feasible within this watershed, project investigations over the past three years have demonstrated that infiltration may be feasible in specific locations. As a result, infiltrating runoff via the use of a drywell (or similar) may be a desirable and efficient alternative to the catch basin inlet filters. If and where such control measures are used, their load reduction efficiency will at least match those predicted by the catch basin inlet filters.

As discussed in Section 2.3.1, the antidegradation sites SMB 6-2, SMB 6-5, and SMB 6-6 exceeded the interim wet weather targets set for these sites. This has occurred twice over the past five years at SMB 6-5 and three times over that same time at SMB 6-2. The Beach Cities WMG will initiate a source tracking investigation in each of these watersheds to seek to identify and eliminate controllable sources of bacteria within these storm drain networks. The source tracking investigation will seek to be initiated in 2019.

In addition, the City of Redondo Beach is currently in the permitting phase of the Torrance Circle Diversion and Infiltration Project, which will be located in the 118-acre drainage area of outfall RB110/SMB O-7. This outfall influences the open beach anti-degradation site SMB 6-2, which is located 100 feet south of the Redondo Beach Pier where RB110 outfalls. The project will improve water quality by capturing dry weather and initial storm flows through a stormdrain "drop type" pipe diversion and directing them into an underground infiltration gallery at Veterans Park located at 309 Esplanade in Redondo Beach. A Maintenance Agreement is currently in development between the City of Redondo Beach and LACFCD.

As the SMB 6-6 watershed only had one year in the past five that exceeded the interim wet weather targets for that site, no changes are proposed to this watershed at this time. The site will be re-evaluated as part of the 2020 Adaptive Management Report.

3.2 Minimum Control Measure Modifications

The Beach Cities WMG would like to modify the EWMP Public Information and Participation Program (PIPP) to better address watershed priorities through direct targeted outreach to residents in lieu of the distribution of print materials at Point of Purchase (POP) retailers.

Section VI.D.5.d(3) of the Permit outlines the following requirements for POP distribution of outreach materials targeted at residents:

"Distribute activity specific storm water pollution prevention public education materials at, but not limited to, the following points of purchase:

a) Automotive parts stores
b) Home improvement centers / lumber yards / hardware stores/paint stores
c) Landscaping / gardening centers
d) Pet shops / feed stores"

The Beach Cities WMG proposes a more customized strategy for providing stormwater pollution prevention outreach targeted at residential do-it-yourself (DIY) auto, home improvement, and gardening activities and pet owner activities. The proposed modified approach is more effective and less difficult to implement than the current POP requirements. Municipal stormwater permittees have no authority to require private retailers to distribute outreach materials to their customers, nor a means to measure the effectiveness of this outreach method. The Beach Cities WMG has limited resources to develop and distribute print-based outreach materials and therefore leverages successful existing programs where appropriate to achieve greater economies of scale and reach a broader audience. In addition, the Beach Cities WMG focuses its resources on the development of dual print/electronic outreach pieces targeted at residential activities for which City staff have identified a clear need and can provide the means of distribution.

The following describes the Beach Cities WMG's proposed customized residential outreach approach:

a) The Beach Cities WMG proposes the following targeted outreach to residents involved in DIY auto activities in lieu of distribution of print materials at automotive parts stores:

    - The Beach Cities WMG agencies participate in the CalRecycle Used Oil and Household Hazardous Waste Program (Used Oil Program), which targets DIY auto enthusiasts and reaches the same target audience as POP via auto parts stores. The CalRecycle Used Oil Program encourages recycling of used lubricating oil and filters, aiming to decrease the illegal disposal/dumping of used oil and to recover more used oil and filters for recycling by establishing a statewide network of collection opportunities and undertaking outreach efforts that include public service announcements, a robust website, YouTube broadcasts, and social media posts. The population of DIY auto enthusiasts in the Beach Cities WMG area is small, however the effectiveness of the Used Oil Program is evidenced by the amount of used oil collected from residents during the 2017 calendar year (the most recent year for which records are available). During the 2017 calendar year, 20,773 gallons of used

lubricating oil were collected from DIY residents by used oil Certified Collection Centers within the Beach Cities WMG area. An additional 286,295 gallons of used oil were changed and properly recycled at these facilities by non-DIY residents during the same time period.[7]

- The Beach Cities WMG is currently developing a Mobile Business Tip Card (in both electronic and print format) targeted at mobile businesses that generate waste water such as mobile auto detailers, window washers, dog groomers, etc. These types of mobile services have been determined by the Beach Cities WMG to be a potential source of pollutants to the MS4. The tip card covers site preparation and cleanup, spill prevention and response, use of environmentally friendly cleaning agents, and proper disposal of wastewater. While this outreach targets a specific business sector, this outreach also reaches residents who use these services, informing them on proper outdoor washing methods and the importance of proper wastewater disposal. The tip card will be distributed through the City counters when businesses come in for permits, through code enforcement in the field, and online via each City's website.

b) The Beach Cities WMG proposes the following targeted outreach to residents involved in DIY home improvement activities in lieu of distribution of print materials at home improvement centers/lumber yards/hardware stores/paint stores:

- Each year, the Beach Cities WMG agencies either host or promote nearby Household Hazardous Waste Collection Events which provide opportunities for disposal of unwanted household chemicals that cannot be disposed of in the regular trash, such as paint and paint thinners, automotive fluids, pesticides, etc. These events are free to the public and advertised on each of the Beach Cities agencies' websites and promoted through the South Bay Environmental Services Center, a program of the South Bay Cities Council of Governments (SBCCOG) which consists of 16 South Bay cities and the County of Los Angeles. The SBESC promotes events through its e-newsletter, social media accounts, and website.
- The Beach Cities agencies conduct outreach on proper waste management, including construction wastes and household hazardous waste products like paint, through their respective contracted waste haulers.
- The Beach Cities agencies have a robust outreach program directed at construction activities which includes outreach regarding building and painting activities. Together with the Peninsula WMG, the Beach Cities WMG developed and is distributing a Small Site Construction brochure aimed at sites less than 1-acre in disturbed area that includes information regarding material storage and handling as well as spill prevention and clean-up and disposal.

[7] LA County Used Oil Collection Report 2017 obtained from CalRecycle.ca.gov.

- The Beach Cities WMG provides outreach to residents on the proper disposal of pool and spa maintenance discharges.

c) The Beach Cities WMG proposes the following targeted outreach to residents involved in DIY landscaping and gardening activities in lieu of distribution of print materials at landscaping/gardening centers:

- The Beach Cities WMG have established Environmentally Friendly Landscaping, Gardening and Pest Control webpages targeted at residents. The webpages were developed by the Beach Cities WMG in partnership with the Peninsula WMG and are being hosted by the South Bay Environmental Services Center (a program of the South Bay Cities Council of Governments) on their website. The webpages include information on minimizing runoff through sustainable gardening and irrigation practices. The webpages also link residents to several rebate programs for smart irrigation systems and water conservation measures and include information on Integrated Pest Management.

  http://www.southbaycities.org/programs/environmentally-friendly-landscaping-gardening-and-pest-control

- The Beach Cities WMG agencies promote sustainable landscaping, gardening and water efficiency programs offered through West Basin Municipal Water District (WBMWD) to its customers who are also residents and businesses of the Beach Cities WMG. Examples of the types of programs offered by WBMWD and promoted by the Beach Cities include:

  i. West Basin Municipal Water District offers a Landscape Irrigation Efficiency Program for large landscape water users (residents and businesses) within its service area, which includes most of the Beach Cities WMG area. The program provides outdoor water evaluations which identify leaks, broken sprinklers and pipes, unnecessary runoff, sprinkler controller issues, and other water wasting problems in landscapes. The program includes sprinkler nozzle retrofits and an outdoor water use report complete with recommendations on more efficient outdoor watering habits.

  ii. West Basin Municipal Water District, in collaboration with the South Bay Environmental Services Center and the Surfrider Foundation, provides California Friendly Landscape workshops for residents to help them manage their landscapes more efficiently. These workshops are free to residents within its service district, which includes most of the Beach Cities WMG area. The program consists of a classroom presentation along with a hands-on workshop at a demonstration garden location. Topics covered in the workshops address both stormwater and non-stormwater pollutant source reduction. Residents learn about native plants and edibles, water efficient smart irrigation control equipment, rainwater capture and permeable materials for on-site retention of rainwater to reduce runoff and pollution to the ocean. The objectives of these workshops are to teach participants to

apply methods that will reduce water consumption, runoff and ocean pollution. As part of the California Friendly Landscape program, West Basin periodically holds weather-based irrigation controller exchange events where customers can attend a 30-minute training on how to install and operate the weather-based irrigation controllers and then trade in their old, inefficient controllers for a new free controller.

iii. West Basin Municipal Water District offers a rain barrel giveaway program that provides residents with free 50-gallon capacity barrel equipped with overflow spout, built-in mosquito screen along with a rain gutter downspout flex arm hose connector. A separate program promoted by the Beach Cities WMG agencies and administered by the Metropolitan Water District of Southern California (MWD) provides $75 rebates to residents within its service district who purchase their own barrels. Rain barrel distribution or rebate programs engage and educate the community through active participation in stormwater capture and may serve as a stepping stone to more significant residential stormwater capture retrofit projects such as downspout disconnection into cisterns or rain gardens.

- The Beach Cities maintain a number of California Friendly gardens and landscapes located throughout the Beach Cities WMG that demonstrate to residents the beauty, utility and economy of native and drought-tolerant plants which require far less water, fertilizer and pesticides than traditional landscape plantings. Most of these demonstration gardens are also equipped with interpretive signage. Examples include:

  i. Manhattan Beach Botanical Garden, 1236 N. Peck Avenue, Manhattan Beach (adjacent to Polliwog Park)

  ii. Hermosa Beach Community Center Ocean Friendly Garden, 710 Pier Avenue, Hermosa Beach

  iii. Low Water Demonstration Garden at Hermosa Beach City Hall, 1315 Valley Drive, Hermosa Beach

  iv. Madrona Marsh Demonstration Garden, 3201 Plaza Del Amo, Torrance

  v. Redondo Beach City Hall Demonstration Garden, 415 Diamond Street, Redondo Beach

d) The Beach Cities WMG proposes the following targeted outreach to residential pet owners in lieu of distribution of print materials at pet shops/feed stores:

- The Beach Cities agencies equip their municipal parks with pet waste collection stations. In addition, the linear greenbelt and Strand that serve as jogging/walking paths and run the length of the cities of Hermosa Beach and Manhattan Beach are also equipped with pet waste collection stations as well as The Esplanade, a walkway that runs along the beach in South Redondo Beach.

- The City of Hermosa Beach also recently launched the city-wide "Here's the Scoop: For Cleaner Feet, Streets and Water" Pet Waste campaign to raise awareness about the importance of proper pet waste disposal and to encourage residents and visitors to clean up after their pets to help protect the environment, reduce health hazards, keep streets and sidewalks clean and avoid a $25 fine. The campaign includes the "Hermosa's Responsible Pet Owner" pledge, which rewards responsible pet owners who pledge to pick up after their pets and follow the City's pet owner ordinances by entering them to win a free annual dog license from the City. Hermosa Beach plans to share materials developed for the campaign with the other agencies in the Beach Cities WMG for use in their respective cities.

Pending approval from the Regional Board, the Beach Cities WMG will modify pages 2-41 through 2-48 and Appendix L of the Beach Cities EWMP to the incorporate the proposed changes to the PIPP Program MCMs.

3.3 Changes to Compliance Deadlines and Interim Milestones

As mentioned in Section 2.2.3, the Beach Cities WMG received approval on February 6, 2018 to modify their implementation schedule for the Santa Monica Bay Debris TMDL. No change to the final milestone for achievement of 100% reduction in trash from baseline is proposed at this time.

No other changes to compliance deadlines or interim milestones are proposed at this time.

3.4 Re-Evaluation of Water Quality Priorities

Water quality priorities were re-evaluated based on the State's most-up-to-date 303(d) List as well as available water quality monitoring data.

3.4.1 Based on 303(d) List Changes

As required, the EWMP was drafted to address water body-pollutant combinations (WBPCs) that fell into the following three categories:

- Category 1: Pollutants for which WQBELs and/or RWLs are established in Part VI.E and Attachments L through R of the Permit (i.e., WBPCs for which a TMDL exists).
- Category 2: Pollutants for which data indicate water quality impairment in the receiving water according to the 303(d) List and for which MS4 discharges may be causing or contributing to the impairment.
- Category 3: Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State's Listing Policy, but which exceed applicable RWLs contained in the Permit and for which MS4 discharges may be causing or contributing to the exceedance.

Since the time the EWMP was drafted, a revised 303(d) List has been finalized by the State. This 303(d) List ("2016 303(d) List") includes the following differences compared to the 2012 303(d) List:

- Beaches along Hermosa Beach and Manhattan Beach were removed from the 303(d) list for indicator bacteria;
- Santa Monica Bay Offshore/Nearshore was removed from 303(d) list for sediment toxicity;
- Mercury has been added to the 303(d) list for Santa Monica Bay;
- Arsenic has been added to the 303(d) list for Santa Monica Bay;
- Ammonia has been removed from the 303(d) list for Dominguez Channel; and
- Dominguez Channel Estuary was added to 303(d) list for Benthic Community Effects.

As a result of these changes, mercury and arsenic are now considered Category 2 WBPCs for Santa Monica Bay, and ammonia has been removed from the Category 2 WBPC designation for Dominguez Channel. Applicable tables in the Beach Cities EWMP will be updated accordingly.

The RAA will not be re-run for mercury and arsenic in Santa Monica Bay, since there is currently no data demonstrating a linkage between MS4 discharges and these listings.[8] However, these constituents have been added to the Beach Cities CIMP and will be monitored in forthcoming years to evaluate if MS4 discharges are contributing to these pollutant loads.

3.4.2 Based on Water Quality Data

As detailed in the Beach Cities' 2017 and 2018 Annual Watershed Reports, no water quality sample results collected to-date have demonstrated that the Beach Cities have caused or contributed to applicable RWL exceedances that are not already being addressed by a TMDL or are not already being addressed as a high priority pollutant due to 303(d) listing. As a result, no changes to water quality priorities based on monitoring data are necessary.

[8] Listing was based on a limited set of fish tissue sampling data collected under the City of Los Angeles Hyperion Wastewater Treatment Plant NPDES permit. This data was collected during 2006 and 2007, more than ten years ago.

4 AVAILABILITY OF NEW INFORMATION

Since the Beach Cities EWMP was drafted and approved, the following new information has been made available to the Beach Cities WMG:

- Two complete years of monitoring data per the Beach Cities Coordinated Integrated Monitoring Program (CIMP), including receiving water monitoring in SMB, Dominguez Channel, and Torrance Lateral, as well as outfall monitoring from six stormwater events and two dry weather events;
- Additional shoreline monitoring data collected under the Santa Monica Bay Beaches Bacteria TMDL Coordinated Shoreline Monitoring Plan. This data covers 11 sites within Jurisdictions 5 and 6, and has been analyzed through the last complete TMDL Year (TMDL Year 2017); and
- The updated 2016 303(d) list, which included alterations to WBPCs within SMB and Dominguez Channel.

As discussed above, this information was used as appropriate in this adaptive management report.

5 RECOMMENDATIONS FROM REGIONAL BOARD

During the public draft period of the EWMP, prior to final approval, the Beach Cities WMG received comments on the EWMP from the Regional Board and the public. Recommendations stemming from those comments were considered by the WMG, and either incorporated or otherwise addressed in the approved EWMP. Since this period, the WMG has not received additional comments or recommendations from the Regional Board that are not already addressed by the EWMP.

Appendix A

Santa Monica Bay Debris TMDL Compliance Strategy

City of Redondo Beach

Section 8.1 of the Individual Annual Report Form requires the Permittees subject to Trash TMDLs to submit a Trash TMDL Compliance Report detailing compliance with applicable interim and/or final effluent limitations. This document provides the Trash TMDL Compliance Report for the City of Redondo Beach for the Santa Monica Bay Nearshore and Offshore Marine Debris Total Maximum Daily Load.

The City of Redondo Beach (City) is named as a responsible party to the Santa Monica Bay (SMB) Nearshore and Offshore Marine Debris Total Maximum Daily Load (Debris TMDL), which became effective on March 20, 2012. The Debris TMDL regulates point sources and non-point sources of trash by establishing a Waste Load Allocation (WLA) and Load Allocation (LA), respectively and includes an eight-year implementation and compliance schedule. The Debris TMDL effectively requires responsible agencies to eliminate the discharge of trash from their jurisdictions.

The City is complying with the point source requirements of the Debris TMDL through the installation of trash full capture devices (FCDs) and with the non-point source requirements by implementing a Minimum Frequency and Collection/Best Management Practice (MFAC/BMP) Program as outlined in the City's approved Trash Monitoring and Reporting Plan (TMRP). Within this document, a Point Source Compliance Report and a Non-Point Source Compliance Report for the City are presented.

Point Source Compliance Report

The Debris TMDL includes point source compliance milestones to be phased over the final four years of the TMDL's implementation period. The compliance milestones are a step-wise reduction of trash from the baseline WLA allocation assigned in the TMDL.[1] The default baseline WLA for the City is 807 gallons/square mile/year. Beginning four years after the effective date of the Debris TMDL, or on March 20, 2016, the City must begin to demonstrate a 20 percent reduction in trash from the baseline WLA per year.

In December 2017, the Beach Cities Watershed Management Group (Group) requested to revise the interim milestones for the Debris TMDL[2] as a part of an Enhanced Watershed Management Plan (EWMP) modification request, which was approved by the Regional Board in February 2018[3]. The revised interim milestones and final milestone for the Debris TMDL are listed in **Table 1**.

The EWMP process is identifying strategies to address multiple pollutants of concern, including trash. As a result, the long-term trash management actions/measures are tied in with large-scale projects, which are being developed to address multiple pollutants. Others are pending permits from outside agencies (e.g., LACFCD, Caltrans). Upon completion, these trash management actions/measures will address the entire portion of the City within the Santa Monica Bay WMA, excluding the King Harbor area, which is being addressed under the City's TMRP for non-point sources of trash.

Reductions may be assumed wherever FCDs are installed and maintained in corresponding percentages of the conveyance discharging to waterbodies within the Santa Monica Bay Watershed or directly to Santa Monica Bay. As such, the City is demonstrating compliance with the point source requirements of the Debris TMDL by installing FCDs in the corresponding percentage of the conveyances discharging to water bodies within the Santa Monica Bay Watershed Management Area (WMA) or directly to Santa Monica Bay.

[1] Pursuant to the Permit, the baseline WLA for the City is an annual trash discharge of 3,197 gallons/year (baseline WLA of 807 gallons/square mile/year from Debris TMDL multiplied by City area discharging to Santa Monica Bay).

[2] Letter from Beach Cities Watershed Management Group to Los Angeles Regional Water Quality Control Board, *Request for Schedule Revision to the Beach Cities Enhanced Watershed Management Program*, December 14, 2017.

[3] Letter from Los Angeles Regional Water Quality Control Board to Beach Cities Watershed Management Group, *Approval of Modifications to the Beach Cities Watershed Management Group's Enhanced Watershed Management Program (EWMP)*…., February 6, 2018.

Table 1. Santa Monica Bay Nearshore and Offshore Debris TMDL Point Source Milestones and Dates

Milestone[1,2]	Date
20 Percent Reduction from the Baseline WLA	March 20, 2016
40 Percent Reduction from the Baseline WLA	March 20, 2017
Determine compliance strategy for installing full capture trash systems, taking into account planned regional projects. Report compliance strategy to the Board in December 2018.	August 20, 2018
Installation of full capture trash systems serving 50% of the MS4 drainage area to Santa Monica Bay outside of Regional EWMP BMPs.	March 20, 2019
100 Percent Reduction from the Baseline WLA	March 20, 2020

1. Compliance with percent reductions from the Baseline WLA will be assumed wherever properly sized full capture systems are installed, properly operated, and maintained in corresponding percentages of the conveyance discharging to waterbodies within the Santa Monica Bay Watershed or directly to Santa Monica Bay.
2. The City is demonstrating compliance with the point source requirements of the Debris TMDL by installing FCDs in the corresponding percentage of the conveyances discharging to water bodies within the Santa Monica Bay Watershed or directly to Santa Monica Bay.

There are 15 sub-watersheds within the SMB WMA that the City has addressed or will address as part of its point source compliance activities. These sub-watersheds and the respective area for each, in acres, are presented in **Table 2**. Their locations are shown in **Figure 1**.

Table 2. Sub-watersheds and Related Areas for City Point Source Compliance Actions

Sub-watershed Name	Area (Acres)
Wylie Sump	72
Herondo Drain (Regional)	977[1]
South Bay Galleria[2]	16
Beryl Street	70
Lower Herondo	17
Seaside Lagoon (Regional)	441
Torrance Circle Lower	14
Torrance Circle Upper	132
Sapphire Street	149
Alta Vista	100
Lower Avenue F	98
Middle Avenue F	165
Upper Avenue F	141
Lower Avenue I	61
Calle Miramar	95
Total Area SMB WMA	**2,548**

1. Only includes the area within the SMB WMA. The areas for the Beryl Street sub-watershed (69.4 acres) and the Lower Herondo sub-watershed (16.5 acres) were subtracted from the total area as they overlap the Herondo sub-watershed.
2. This CDS unit is primarily located within the Dominguez Channel WMA but was included in Section 8.1 to demonstrate the City's overall trash management actions related to point sources.

To date, the City has installed five continuous deflection separation (CDS) units that capture all particles greater than 5 millimeters. The type, location, and treatment area for each of the five City-installed CDS units are presented in **Table 3**.

Table 3. CDS Type, Sub-Watershed Name, and Treatment Area for City-Installed CDS Units

CDS Type	Sub-Watershed Name	Treatment Area (Acres)
Model PSW 70_70	South Bay Galleria[1]	16
Model PSW 70_70	Sapphire St	149
Model 7070-V	Calle Miramar	95
Model PSW 50_42	Torrance Circle	14
Model PSW 30_28	Alta Vista	100
	Total Area with CDS Units	**473**

1. This CDS unit is located within the Dominguez Channel watershed, but it was included in Section 8.1 to demonstrate the City's overall trash management actions related to point sources.

In addition, the City has installed four FCDs (United Stormwater Connector Pipe Screens) and four Automatic Retractable Screens for the City-owned catch basins within the Beryl Street sub-watershed, which is located in the central portion of the City and has a sub-watershed area of approximately 72.3 acres.

Furthermore, the City is utilizing Wylie Sump as a point source compliance measure, since the Sump does not have an outlet and the City and County manually remove all trash and debris from the Sump area to ensure that any captured trash does not leave the Sump area. Wylie Sump is located in the west-central portion of the City between N. Wylie Lane, Artesia Boulevard, Ford Avenue, and Goodman Avenue. The Wylie Sump is approximately 80 feet deep and has an area of approximately 3 acres. The City drains approximately 72 acres to Wylie Sump.

Table *4* provides the sub-watershed names and associated areas for locations of currently implemented point source compliance actions, as well as the percent of the City within the SMB Watershed Management Area (WMA) being addressed by these actions.[4] **Table 5** contains location, installation date, owner, maintenance, and other information related to the five CDS units and the four Connector Pipe Screens/Automatic Retractable Screens.

[4] The area of the City within the SMB WMA is approximately 2,692.6 acres.

Table 4. Sub-Watershed and Areas for Currently Implemented Point Source Compliance Actions

Sub-Watershed Name	Area (Acres)
Wylie Sump	72
South Bay Galleria[1]	16
Beryl Street	70
Torrance Circle Lower	14
Sapphire Street	149
Alta Vista	100
Calle Miramar	96
Total Treatment Area	**517**
Percent of SMB WMA	**20%**

1. This CDS unit is primarily located within the Dominguez Channel watershed, but it was included in Section 8.1 to demonstrate the City's overall trash management actions related to point sources.

Table 5. Full Capture Device Information[1]

Certified FCDs Installed	FCD Location	Nearest Cross Street	FCD Owner	FCD Maint. By	FCD Installation Date	CB ID No. Served by FCD	CB Type	CB Owner	CB Maint. By	Frequency of FCD Maint. and other O&M comments
Model PSW 70_70	Sapphire St	Esplanade	Ci	Ci	2002	N/A	Unk	Ci	Ci	1x/6 mo
Model PSW 70_70[2]	Redondo Beach Blvd	Hawthorne Blvd	Ci	Ci	2003	N/A	Unk	Ci	Ci	1x/6 mo
Model PSW 50_42	Coral Way	W Torrance Blvd	Ci	Ci	2005	N/A	Unk	Ci	Ci	1x/3 mo
Model 7070-V	Calle Mira Mar	Esplanade	Ci	Ci	2006	N/A	Unk	Ci	Ci	1x/6 mo
Model PSW 30_28	Camino Real	Juanita Ave	Ci	Ci	2011	N/A	Unk	Ci	Ci	1x/3 mo
4 ARS/CPS units (United Storm Wing Gate)	Beryl	Flagler	Ci	Ci	2017	N/A	Curb-inlet	Ci	Ci	1x/3 mo

Ci = City; Unk = Unknown

1. Table headers are from the FCD Database Tab from the Permit's Trash TMDL Compliance Reporting Forms Excel Workbook found at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/trash/index.shtml
2. This CDS unit is located within the Dominguez Channel watershed but was included in Section 8.1 to demonstrate the City's overall trash management actions related to point sources.

During the 2016-2017 Reporting Year, the City identified sub-watersheds in which regional, multi-benefit devices are being investigated; watersheds in which near-term full capture trash devices will be installed pending outside agency permits (County of Los Angeles and CalTrans); and future compliance watershed areas. The regional, multi-benefit devices include the following (**Figure 1**):

- **Herondo (190th street)** – The Herondo sub-watershed area is located in the north-central area of the City and has an approximate sub-watershed area of 977.5 acres within the SMB WMA. The City has signed a Memorandum of Understanding (MOU) with the City of Manhattan Beach, the City of Hermosa Beach, and the City of Torrance to fund the design and installation of the Hermosa Beach Greenbelt Trench Infiltration Project (Hermosa Project), the first regional project in the high priority Herondo Watershed, in order to meet compliance deadlines outlined in the Enhanced Watershed Management Program (EWMP). The primary design objective of the Hermosa Project is to improve coastal water quality by providing pollutant load reduction through 100 percent retention of diverted stormwater and associated pollutant loads, including indicator bacteria, sediment-borne dichlorodiphenyltrichloroethane (DDT) and polychlorinated biphenyl (PCB), and trash/debris. The Hermosa Project will be constructed on parkway land (underneath the running path adjacent to Valley Drive) owned by the City of Hermosa Beach and, when completed, will be owned and maintained by the City of Hermosa Beach. The Beach Cities EWMP Group received a Proposition 1 grant for $3,099,400 to complete the project, which is expected to be completed by 2020. The project continues to be in the preliminary design phase due to a change of project location. The project had extreme community opposition to the selected greenbelt location. Therefore, other locations are currently being investigated and will be approved by the Hermosa Beach City Council. The new project location will also have a design goal of including certified FCD's into the design.
- **Seaside Lagoon** – The Seaside Lagoon sub-watershed is located in the central portion of the City and has an approximate sub-watershed area of 441 acres. This area is included with the City's Waterfront Development Project which is currently in the design and permitting phase, however undergoing legal review. The City would like to explore the feasibility of incorporating a full capture trash system into the design of this project and eliminate the need to retrofit upstream catch basins. Since the Waterfront Development Project continues to be in legal review, the City will move forward with the installation of FCDs within this sub-watershed. The City's intent is to install combination of FCD at the catch basins and downstream storm drains. This sub-watershed is adjacent to the City's Trash Monitoring and Reporting Program area and also drains into King Harbor. This sub-watershed has localized flooding areas that will limit the use of catch basins screening devices. In addition, the installation of FCDs at the outfall pipe would require permitting from the Los Angeles County Flood Control District since they own the outfall storm drain pipe.

Table 6 presents a summary of the regional, multi-benefit trash management measures, the sub-watershed they will be located in, the treatment area they will address, and the percent of the City within the SMB WMA being addressed by these measures.

Table 6. Regional, Multi-Benefit Trash Management Measures

Management Measure	Sub-Watershed Name	Treatment Area (Acres)
Greenbelt Trench Infiltration	Herondo Drainage	977[1]
Waterfront Development/ Other FCDs	Seaside Lagoon	441
	Total Treatment Area	**1,418**
	Percent of SMB WMA	**56%**

1. The areas for the Beryl Street Sub-Watershed (69.4 acres) and the Lower Herondo Sub-Watershed (16.5 acres) were subtracted from the total area as they overlap the Herondo Sub-Watershed Area.

The near-term trash management measures pending outside agency permits include the following (**Figure 1**):

- **Torrance Circle Upper –** The Torrance Circle Upper Sub-Watershed is located in the south-central portion of the City and has an approximate sub-watershed area of 132.4 acres. The City will install a FCD called Aqua Shield that was approved in August 2017 as a full capture device by the State Water Resources Control Board. Installation plans were prepared and are currently under review for approval by the LACFCD since the storm drain that the device will be installed on is owned by the LACFCD. The City continues to diligently work with LACFCD on obtaining an MOU and/or agreement to install the unit. In addition, the City is working on obtaining LACFCD approval of the project plans.
- **Middle Avenue F** – The Middle Avenue F Sub-Watershed is located in southern portion of the City and has an approximate sub-watershed area of 165.3 acres. The City has issued a contract to United Stormwater to install 44 catch basin FCDs in the project area. The City issued a Notice of Award to United Stormwater on August 14, 2017. The FCDs will be installed in the LACFCD's storm drain system within the California Department of Transportation (Caltrans) right-of-way. The City has signed a MOU with the LACFCD and is working with Caltrans to obtain the necessary permits. The City continues to diligently work with LACFCD on obtaining an MOU and/or agreement to install the units.
- **Lower Avenue I –** The Lower Avenue I Sub-Watershed is located in the southern portion of the City and has an approximate sub-watershed area of 61.1 acres. The City has issued a contract to United Stormwater to install 16 catch basin FCDs in the project area. The City issued a Notice of Award to United Stormwater on August 14, 2017. The FCDs will be installed in the LACFCD's storm drain system within the California Department of Transportation (Caltrans) right-of-way. The City has signed a MOU with the LACFCD and

is working with Caltrans to obtain the necessary permits. The City continues to diligently work with LACFCD on obtaining an MOU and/or agreement to install the units.

- **Lower Herondo (below the Greenbelt Project)** – The Lower Herondo Sub-Watershed is located in the western portion of the City and has an approximate sub-watershed area of 16 acres. The City will address two catch basins in this area with FCDs.
- **Lower Avenue F** – The Lower Avenue F Sub-Watershed is located in the southern portion of the City and has an approximate sub-watershed area of 98 acres. The City will address 29 catch Basins in this area with FCDs.

Table 7 presents a summary of the near-term trash management measures pending outside permits, the sub-watershed they will be located in, the treatment area they will address, and the percent of the City within the SMB WMA being addressed by these measures.

Table 7. Near-Term Trash Management Measures Pending Outside Permits

Management Measure	Sub-Watershed Name	Treatment Area (Acres)
Aqua Shield FCD	Torrance Circle Upper	132
United Stormwater FCDs	Middle Avenue F	165
United Stormwater FCDs	Lower Avenue I	61
Catch basin Trash Excluder FCDs	Lower Herondo Drainage	16
Catch basin Trash Excluder FCDs	Lower Avenue F	97
	Total Treatment Area	**471**
	Percent of SMB WMA	**18%**

The future compliance sub-watersheds include the following (**Figure 1**):

- **Upper Avenue F** – The Upper Avenue F Sub-Watershed is located in the south-eastern portion of the City and has an approximate sub-watershed area of 141.2 acres. Dry and wet weather runoff in this area drains to the LACFCD's Doris Coast Pump Station (33.818744, -118.374697), which has a trash screen ahead of the pump apparatus. The City is reviewing operations and plans for the Pump Station to determine if full capture compliance is being met.

Table 8 presents a summary of the future compliance measures, the sub-watershed they will be located in, the treatment area they will address, and the percent of the City within the SMB WMA being addressed by these measures.

Table 8. Future Compliance Management Measures

Management Measure	Sub-Watershed Name	Treatment Area (Acres)
Doris Coast Pump Station	Upper Avenue F	141
	Total Treatment Area	**141**
	Percent of SMB WMA	**6%**

After the implementation of the above detailed trash management measures, the City will have implemented point source compliance actions throughout the City and will be complying with the new interim milestones that were approved by the Regional Board in February 2018 as outlined above. As such, the City will ultimately meet the required, final, March 20, 2020 reduction from the baseline WLA compliance milestone or, in the City's case, installation of FCDs in 100 percent of the conveyances discharging to water bodies within the Santa Monica Bay WMA or directly to Santa Monica Bay.

Table 9 presents a summary of the four types of trash management actions by sub-watershed area type, the treatment areas for each, and the percent of the SMB WMA they address. In addition to the trash management actions/measures, the City continues to implement many of the following industry-standard institutional controls to address trash issues within their jurisdiction, as listed in the TMRP, including:

- Street sweeping of all streets on a weekly basis;
- Cleaning of all catch basins at least one a year;
- Cleaning of all CDS units one to three times per year depending on priority; and
- Special event permits for large events that require a maintenance fee to ensure the event will be properly staffed to minimize trash levels.

Table 9. Trash Management Actions, Treatment Acres, and Percent of SMB WMA

Sub-Watershed Area Type[1]	Treatment Area (Acres)	Percent of SMB WMA
Currently Implemented/Completed	517	20%
Regional	1,350[2]	53%
Near-Term/Projects Underway	471	18%
Future Projects	141	6%
TMRP Non-Point Source Area[3]		5%
Total		~100%

1. Omits the areas for the Beryl Street Sub-Watershed (69.4 acres) and the Lower Herondo Sub-Watershed (16.5 acres), since they overlap the Herondo Sub-Watershed Area.
2. This area of the City area drains to the Harbor and is being addressed by the City's TMRP non-point source compliance program.

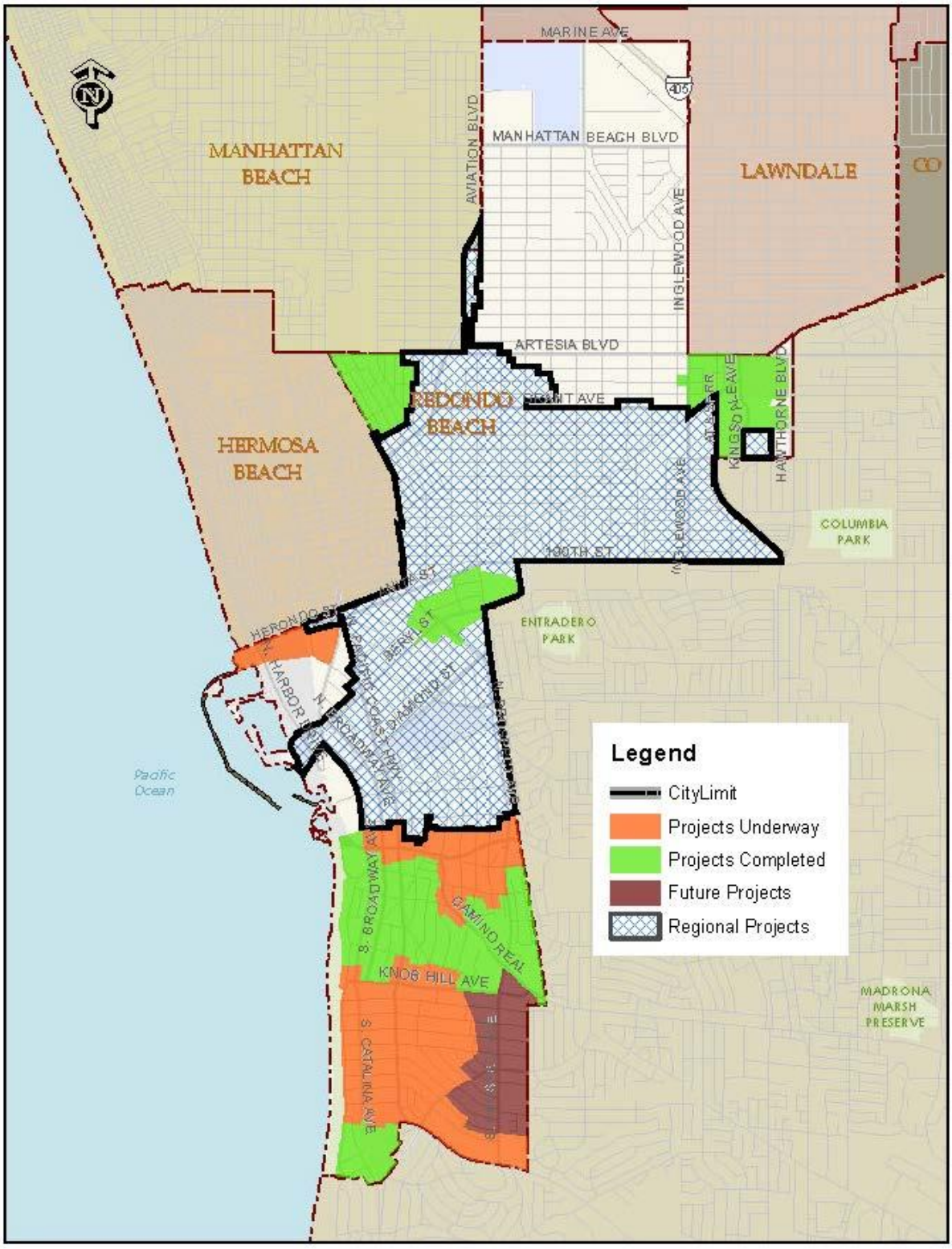

Figure 1. City of Redondo Beach SMB Marine Debris TMDL Implementation Measures

Non-Point Source Compliance Report

The Debris TMDL assigns non-point source LAs to agencies that own and/or manage beaches and harbors along SMB; the City owns and operates King Harbor. The LA is zero trash, with zero trash for non-point sources defined as no trash on the shoreline or beaches, or in harbors adjacent to SMB immediately following each assessment and collection event consistent with an established MFAC.

In January 2018, the City requested a revision to the TMRP, which was conceptually approved by the Regional Water Board in July 2018[5] and formally submitted (consistent with the discussions with Regional Water Board staff) by the City in September 2018[6]. The revised TMRP included functional updates to the site descriptions, maps, and MFAC methodology as well as a revised monitoring frequency that will be initiated in 2018-2019.

MFAC Program

The City is implementing a MFAC Program, which was established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affects beneficial uses between collections. Trash collection and assessment events occur monthly at four locations within King Harbor and at three locations along the shoreline adjacent to King Harbor.

Collection and Assessment events in the Harbor take place at the following four locations:

- H1: The northwest corner of Basin 1
- H2: The northwest corner of Basin 2
- H3: The southwest corner of Basin 2
- H4: The north end of the Main Harbor Channel

Collection and Assessment events along the shoreline take place at the following three locations:

- P1: North edge of the north portion of the pier
- P2: Midpoint on the beach between the pier
- P3: South edge of the south portion of the pier

Figure 2 represents all seven monitoring sites within King Harbor and along the shoreline.

As part of the MFAC/BMP Program, the City is also implementing multiple trash BMPs to address non-point sources of debris. The City has implemented many of the following industry-standard institutional controls successfully to address trash issues within their jurisdiction, as listed in the TMRP, including:

[5] Email approval of the proposed changes from Stefanie Hada with the Los Angeles Regional Water Quality Control Board to the City of Redondo Beach, July 23, 2018.

[6] Letter from the City of Redondo Beach to the Los Angeles Regional Water Quality Control Board, *Modifications to the City of Redondo Beach's Trash Monitoring and Reporting Plan for the Santa Monica Bay Nearshore and Offshore Debris Total Maximum Daily Load*, September 18, 2018.

- Street sweeping of all streets on a weekly basis;
- Cleaning of all catch basins at least one a year;
- Cleaning of all CDS units one to three times per year depending on priority;
- Installation of trash receptacles at many locations throughout King Harbor and the pier/shoreline areas;
- Anti-littering signage at many locations throughout King Harbor and the pier/shoreline areas;
- Removal of trash from King Harbor waters on a regular basis;
- Cleaning of parking lots and other public surfaces around King Harbor on a regular basis;
- Cleaning events on the shoreline areas; and
- Special event permits for large events that require a maintenance fee to ensure the event will be properly staffed to minimize shoreline trash levels.

The City will use the data gathered during implementation of the MFAC Program to guide future BMP implementation to ensure compliance with the non-point source requirements of the Debris TMDL.

Figure 2. Debris TMDL Harbor-Pier Monitoring Locations

The purpose of the assessment is to evaluate trash generation over time and to collect data needed to improve the MFAC/BMP Program. As recommended by the Debris TMDL, the City utilizes the Surface Water Ambient Monitoring Program's (SWAMP) Rapid Trash Assessment Protocol (RTAP) Worksheet during each monthly event. The worksheet allows crews to assess and record the following parameters:

- Level of Trash
- Actual Number of Trash Items Found
- Threat to Aquatic Life
- Threat to Human Health
- Illegal Dumping
- Illegal Littering
- Accumulation of Trash

Each parameter is scored based on a site's condition categories. The range is 20 – 0, and represent optimal, sub optimal, marginal, and poor conditions. A score of 20 is considered optimal, while a score of 0 is considered poor. The score for each parameter is calculated and a total score is recorded which represents the monitoring site's overall condition. The highest score a site can receive is 120.

The City conducted monthly collection and assessment events through the entire reporting period (July 1, 2017 – June 30, 2018). The RTAP Score along with the weight (pounds) of trash collected at each of the seven monitoring sites for the MFAC Events are presented in **Table 10**. The average RTAP Score and total weight per site are presented in **Table 11**. **Figure 3** and **Figure 4** provide a graphical representation of the RTAP score and total weight for each site by MFAC Event, respectively.

There was zero trash immediately following each collection and assessment event, which indicates the City is in compliance with the requirement to achieve the LA immediately after each collection and assessment event.

The revised TMRP (submitted In September 2018) includes a revision to the MFAC schedule. Starting with the 2018-2019 monitoring year, 8 MFAC events will be conducted.

Table 10. 2017-2018 MFAC Program Data[7]

Event	Date	Site	RTAP Score	Weight in Pounds
1	7/27/17	P1	55	7.47
1	7/27/17	P2	65	7.87
1	7/27/17	P3	38	10.07
1	7/27/17	H1	105	0.3
1	7/27/17	H2	84	2.64
1	7/27/17	H3	88	1.62
1	7/27/17	H4	45	8.77
2	8/17/17	P1	52	6.15
2	8/17/17	P2	66	6.54
2	8/17/17	P3	26	11.46
2	8/17/17	H1	92	0.19
2	8/17/17	H2	101	0.38
2	8/17/17	H3	76	0.57
2	8/17/17	H4	44	4.98
3	9/25/17	P1	57	1.89
3	9/25/17	P2	-	-
3	9/25/17	P3	68	1.58
3	9/25/17	H1	102	0.11
3	9/25/17	H2	82	0.41
3	9/25/17	H3	97	0.59
3	9/25/17	H4	47	9.06
4	10/19/17	P1	41	4.14
4	10/19/17	P2	-	-
4	10/19/17	P3	-	-
4	10/19/17	H1	108	0.15
4	10/19/17	H2	97	0.26
4	10/19/17	H3	112	0.52
4	10/19/17	H4	50	8.35
5	11/10/17	P1	53	4.85
5	11/10/17	P2	-	-
5	11/10/17	P3	64	10.27
5	11/10/17	H1	98	0.13
5	11/10/17	H2	94	0.52
5	11/10/17	H3	34	14.46
5	11/10/17	H4	42	23.83
6	12/15/17	P1	47	3.17

[7] Due to construction on the parking structure, sites P2 and/or P3 were inaccessible September – November 2017.

Event	Date	Site	RTAP Score	Weight in Pounds
6	12/15/17	P2	78	5.75
6	12/15/17	P3	77	4.8
6	12/15/17	H1	120	0.01
6	12/15/17	H2	99	8.48
6	12/15/17	H3	120	0.01
6	12/15/17	H4	29	15.69
7	1/12/18	P1	65	19.34
7	1/12/18	P2	81	52.09[8]
7	1/12/18	P3	63	4.71
7	1/12/18	H1	106	1.21
7	1/12/18	H2	89	1.45
7	1/12/18	H3	100	0.72
7	1/12/18	H4	75	17.5
8	2/23/18	P1	56	5.01
8	2/23/18	P2	83	12.04
8	2/23/18	P3	63	2.23
8	2/23/18	H1	93	0.13
8	2/23/18	H2	79	0.38
8	2/23/18	H3	70	1.57
8	2/23/18	H4	47	13.88
9	3/14/18	P1	40	20.5
9	3/14/18	P2	81	2.12
9	3/14/18	P3	62	2.63
9	3/14/18	H1	81	1.39
9	3/14/18	H2	88	0.09
9	3/14/18	H3	46	3.24
9	3/14/18	H4	52	23.36
10	4/25/18	P1	47	4.14
10	4/25/18	P2	81	1.41
10	4/25/18	P3	70	8.44
10	4/25/18	H1	73	0.99
10	4/25/18	H2	76	1.06
10	4/25/18	H3	83	7.64
10	4/25/18	H4	52	30.04
11	5/24/18	P1	59	4.56
11	5/24/18	P2	97	1.02

[8] Weight for Site P2 during January MFAC event was significantly higher due to 1 large item being found within site boundaries (wooden pier pylon section weighing over 50lbs.). This site typically has low levels of debris, thus this month's weight was an anomaly.

Event	Date	Site	RTAP Score	Weight in Pounds
11	5/24/18	P3	74	8.9
11	5/24/18	H1	89	1.5
11	5/24/18	H2	84	3.18
11	5/24/18	H3	92	0.33
11	5/24/18	H4	57	45.77
12	6/29/18	P1	66	4.37
12	6/29/18	P2	98	0.44
12	6/29/18	P3	85	5.29
12	6/29/18	H1	90	0.33
12	6/29/18	H2	59	6.5
12	6/29/18	H3	110	0.07
12	6/29/18	H4	35	17.52

Table 11. Average RTAP Score and Total Weight by Site

Site	Avg. RTAP Score	Avg. Weight in Pounds
P1	53.17	7.133
P2	81.11	9.92
P3	62.73	6.398
H1	96.42	0.537
H2	86	2.113
H3	85.67	2.612
H4	47.92	18.23

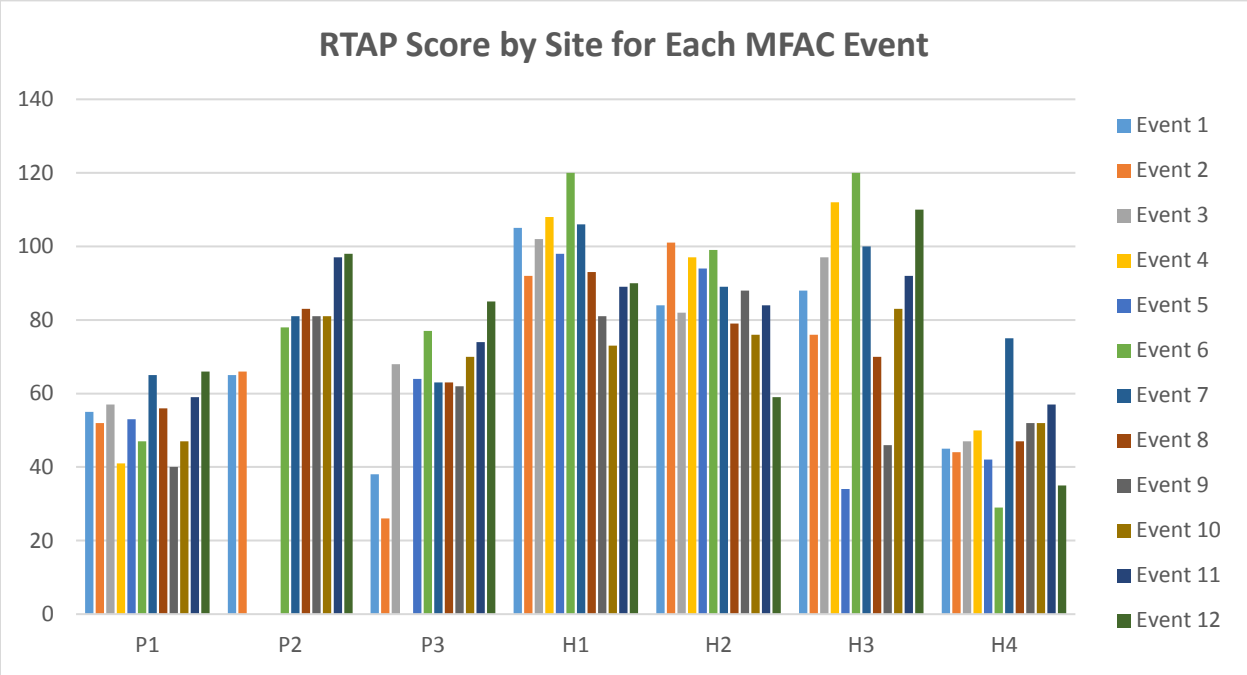

Figure 3. RTAP Score for Each Site by MFAC Event

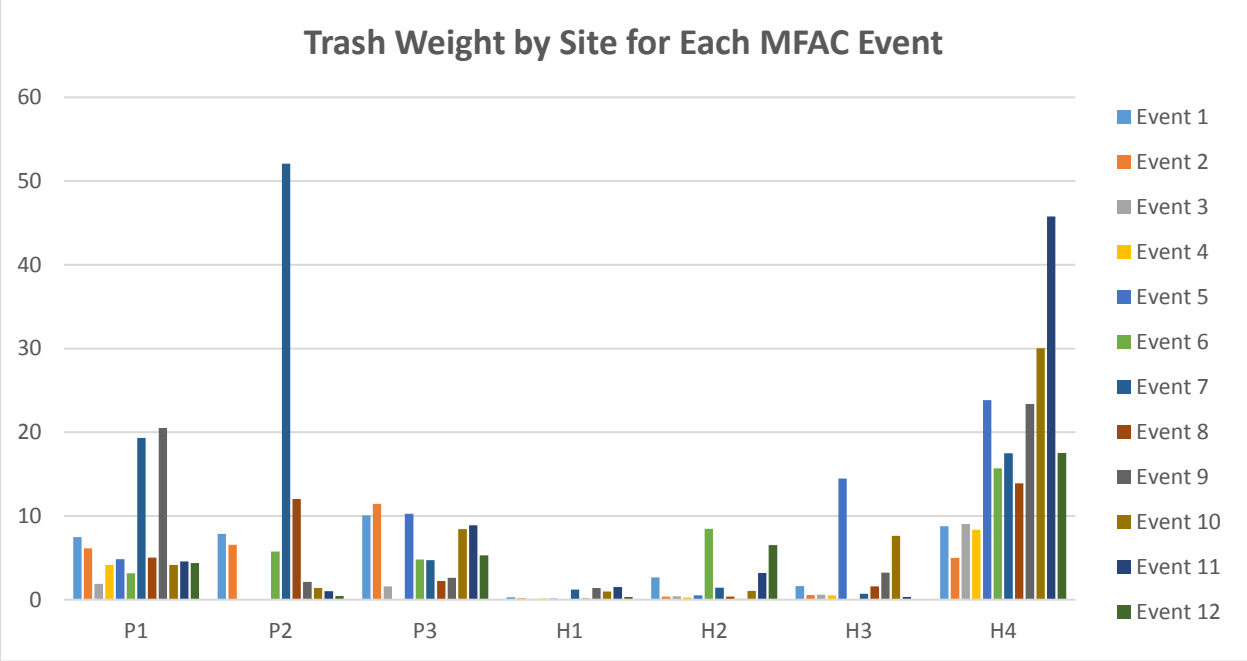

Figure 4. Total Weight for Each Site by MFAC Event

Source Area Assessment

Consistent with the Debris TMDL, the City conducts daily cleanings within King Harbor and on the shorelines adjacent to the pier. The Debris TMDL requires, for areas subject to daily cleaning, the responsible parties demonstrate that the trash generation rate of source areas (parking lots, recreation areas, etc) does not show an increasing trend and does not exceed a benchmark of 310 pounds (lbs) per mile of beach/harbor per day or 113,150 lbs/mile/year. There is approximately 2.57 miles of nonpoint source areas with the City's pier/harbor complex. The extent of the pier/harbor nonpoint source areas is shown in **Figure 5**.

To characterize trash generation from the source areas, the City conducted two source area assessments during the winter (October – April) and two during the summer (May – September)[9]. The events served to assess trash generation rates during the winter (often with less beach/harbor public activity) and during the summer (often with more beach/harbor public activity) and determine the daily trash quantity within the nonpoint source areas. For efficiency, these events were conducted in conjunction with the monthly MFAC events. During the Source Area Assessment events, City staff collected and recorded the weight of all trash from the following two sites, which were designated to represent the source areas:

- H4 – North end of the Main Harbor Channel
    - Break wall adjacent to the King Harbor Yacht Club is consistently used for recreational fishing and other activities
- P2 – Midpoint on the beach between the pier
    - Centrally located on the Redondo beach walkway with significant pedestrian activity

[9] The events were conducted in the early morning. Due to City staff availability, dusk collections are not feasible.

NPS Area	Description	Length (Feet)
1	Yacht Club Way/Break Wall	4,810
2	Marina Way	952
3	Marina, Street Side	1,993
4	Portofino Way	704
5	Inner Harbor	1,882
6	Boardwalk	855
7	Pier	2,393
	Total Length (Feet)	13,589
	Total Length (Miles)	2.57

Figure 5. City Pier/Harbor Nonpoint Source Area Locations

The City conducted two assessments during the winter months and two assessments during the summer months, consistent with the methodology outlined in the revised TMRP and the 2016-2017 reporting year. The weight (lbs) of trash collected at each of the two monitoring sites for the Source Area Assessment Events are presented in **Table 12**. The average weight per site per season and the total average for both sites is presented in **Table 13**.

Table 12. Source Area Assessment Weight by Site and by Season

Event	Season	Date	Site	Weight (lbs)
1	Winter	3/14/18	P2	2.12
			H4	23.36
2	Winter	4/25/18	P2	1.41
			H4	30.04
3	Summer	5/24/18	P2	1.02
			H4	45.77
4	Summer	6/29/18	P2	0.44
			H4	17.52

Table 13. Source Area Assessment Average Weight by Site and by Season

Site	Winter Average (lbs)	Summer Average (lbs)	Total Average (lbs)
H4	26.7	31.65	29.17
P2	1.77	0.73	1.25
Combined	14.23	16.19	15.21

The following calculation steps were used to determine trash generated by nonpoint source areas from data collected at **H4 and P2**:

1. Combined average trash weight from two summer events + combined average trash weight from two winter events/2 = weight of trash (pounds)/1,000 feet[10]/day
    a. (14.23+ 16.19)/2 = 15.21
    b. 15.21 = weight of trash/1,000 feet/day
2. Weight of trash/1,000 feet/day x 5.28 = weight of trash/mile/day
    a. 15.21 x 5.28 = 80.31
    b. 80.31 = weight of trash/mile/day
3. Weight of trash/mile/day x total length of pier/harbor area (2.57 miles) = weight of trash/mile/day for the City's pier/harbor area
    a. 80.31 x 2.57 = 206.39
    b. 206.39 = weight of trash/mile/day for the City's pier/harbor area
4. Weight of trash/mile/day x 365 = weight of trash/mile/year for the City's pier/harbor area
    a. 206.39 x 365 = 75,332
    b. 75,332 = pounds/mile/year for the City's pier/harbor area for nonpoint source areas.

The City evaluated the nonpoint source areas within the pier/harbor area and found that those areas generate approximately 75,332 pounds of trash/mile/year. Based on the City's approximate 2.57 miles of nonpoint source areas, the City-specific nonpoint source area benchmark is 290,796 pounds/mile/year (2.57 miles x 113,150 pounds/mile/year). Based on the City's evaluation, the nonpoint source areas within the pier/harbor area are generating <u>much less</u> trash than the City-specific benchmark of 290,796 pounds/mile/year.

[10] Each assessment location is ~1,000 feet: 10 transects of 100 feet in length were sampled for each site. As the combined average weight from the two sites is being used for this calculation, the average length (1,000 feet) is also used.

Appendix B

Santa Monica Bay Debris TMDL Compliance Strategy

City of Hermosa Beach

Santa Monica Bay Nearshore and Offshore Debris TMDL
City of Hermosa Beach Revised Implementation Strategy

The City of Hermosa Beach (City) lies wholly within the Santa Monica Bay Watershed and is subject to the Santa Monica Bay Nearshore and Offshore Debris TMDL (SMB Debris TMDL). As outlined in the City's approved Trash Monitoring and Reporting Plan (TMRP)[1], the initial implementation strategy to meet the interim and final compliance milestones in the SMB Debris TMDL was through the installation of certified full capture catch basin inserts along a phased schedule. The City began this phased implementation in 2012 by retrofitting 28 catch basins with certified full capture connector pipe screens (CPS) and automatic retractable screens (ARS) tributary to the Hermosa Strand Infiltration Trench project and located within the high-priority commercial area of the City. Additionally, prior to the adoption of the SMB Debris TMDL, 21 catch basins in high trash generating areas were retrofit with ARS units providing partial capture of trash from high trash generating areas.

Since the approval of the City's TMRP, the Statewide Trash Amendments were established providing for a broader range of choices in full capture systems than those previously certified by the Los Angeles Regional Water Quality Control Board (Regional Board). Several of the State Board certified high flow capacity devices achieve multiple benefits by removing sediment and floating hydrocarbons and can address other 303(d) listed pollutants in the Santa Monica Bay besides trash, such as DDT and PCBs. In addition, the Trash Amendments provided for the incorporation of full capture trash systems into planned multi-benefit regional and distributed green street projects. These additional options provide the City an opportunity to meet the SMB Debris TMDL in a more cost-effective manner while achieving multiple benefits and prompted the City to request modifications of the interim milestones proposed in the TMRP and Beach Cities Enhanced Watershed Management Program (EWMP). On February 6, 2018, the Regional Board approved these modifications. The approved revised interim and final milestones applicable to the City for implementing the SMB Debris TMDL are shown in Table 1.

Table 1 Santa Monica Bay Debris TMDL Revised Interim and Final Compliance Milestones

Milestone	Date
Determine compliance strategy for installing full capture trash systems, taking into account planned regional projects.	**August 20, 2018**
Report compliance strategy to the Regional Board.[2]	**December 17, 2018**
Complete installation of full capture trash systems serving 50% of the MS4 drainage area not tributary to planned regional or green street projects.	**March 20, 2019**
Complete installation of full capture trash systems serving the remainder of the City to achieve 100% retrofit of the City's MS4 system.	**March 20, 2020**

[1] The Regional Board approved the City's TMRP and directed the City to begin implementation of the TMRP in its Review of the Beach Cities Letter dated May 22, 2015.

[2] This appendix serves as a summary of the City's 2-year compliance strategy for meeting the TMDL milestones.

During the 2017-18 reporting year the City undertook a major update and modernization of its Storm Drain Master Plan to create a multipurpose GIS-based storm drain system resource guide. This study included hydraulic modeling of the system to identify needed improvements and a prioritized capital improvement program for the system. This SMB Debris TMDL Implementation Strategy leverages the work conducted to update the Storm Drain Master Plan, utilizing key data and findings to determine the most cost-effective approach. The Storm Drain Master Plan evaluated opportunities for incorporating centralized high flow capacity trash capture devices into the storm drain system based on drainage area, system depth, right-of-way ownership, maintenance access, hydraulics and upstream flooding, and constructability. Two optimal locations for siting a centralized high-flow capacity device were identified, with three additional alternative locations identified if the first two are deemed infeasible. One of the optimal locations identified was within the County-owned 16th Street Storm Drain system where it crosses the Hermosa Valley School site. The second location identified was within the Herondo Storm Drain tributary area of the City along Valley Drive (see Figure 1).

The City has revised its strategy for addressing the SMB Debris TMDL using State Board-approved full capture devices or systems according to the approach outlined in Table 2 to achieve 100% reduction of trash from the MS4 by March 20, 2020. The City has a total area of 915.2 acres and 312 storm drain inlets tributary to the Santa Monica Bay. Since the Hermosa Strand Infiltration Trench Project retrofit 28 inlets addressing approximately 50 acres as shown in Year 0 of Table 2, that area reduces the City's total remaining area to be retrofit with full capture devices or systems, leaving 865.2 acres. The Beach Cities WMG is in the planning stages of a large regional project along the Herondo storm drain which is anticipated to address a 283-acre tributary area from the City that includes 73 catch basins. This leaves 582.2 acres and 211 inlets outside of the Herondo Storm Drain Regional Project and Hermosa Strand Infiltration Trench Projects' tributary areas that will need to be retrofit with full capture devices by March 20, 2020. As shown in Table 1 above, 50% of this area (291.1 acres or 106 inlets) has to be addressed in Year 1 (by March 20, 2019). To achieve the Year 1 milestone, the City will install certified full capture devices to address all areas of the City except the areas tributary to the 16th Street Storm Drain upstream of Hermosa Valley School and the areas tributary to the Herondo Storm Drain Regional Project. In Year 2 the City will install a certified centralized full capture trash system on the 16th Street Storm Drain at Hermosa Valley School which was one of the optimal locations identified by the Storm Drain Master Plan, as mentioned above. The Herondo Storm Drain Regional Project will also be completed in Year 2 and at that time the City will determine whether the additional centralized high flow capacity system within that tributary area is needed, or whether additional catch basin devices are needed to treat any small areas not addressed by the regional project. Figure 1 displays a map of the City's storm drain system and identifies the portion of the system tributary to the Hermosa Strand Infiltration Trench project, the planned Herondo Regional Storm Drain Project and the planned Hermosa Valley School centralized trash capture system along the 16th Street Storm Drain.

Table 2 City's 2-year TMDL Implementation Strategy

Year	Milestone Completion Date	Actions	Catch Basins Addressed (% of City Area Addressed by Full Capture Systems)	Approx. Acres Addressed
0	Completed	• Install full capture connector pipe screens in catch basins located in the City's high-priority commercial corridor within Hermosa Strand Infiltration Trench project area.	28 (9%)	50
1	March 20, 2019	• Install full capture devices to address all areas of the City, with the exception of the tributary area to the 16th Street storm drain line upstream of Hermosa Valley School and the tributary area to the planned Herondo Storm Drain Regional Project.	123 (39.5%)	291.2
2	March 20, 2020	• Install a centralized trash capture system for 16th Street Storm Drain at Hermosa Valley School	88 (28%)	291
		• Complete the Herondo Storm Drain Regional Project	73 (23.5%)	283
Total			**312 (100%)**	**915.2**

Although the City intends to rely on certified full capture devices to demonstrate compliance with the final SMB Debris TMDL waste load allocations, the City has also been implementing the following source control measures, including institutional controls and public outreach, to supplement installed full and partial capture devices to meet interim milestones. These source control measures reduce the generation of trash in the watershed and thus the discharge of trash to the MS4.

1. **Smoke Free Zones:** The City has established smoke-free zones in the following locations: all public parks; Pier Plaza, the heart of the city's downtown; the Hermosa Beach Pier; outdoor dining areas, including within five feet of the outdoor dining areas; the Strand, which is the sidewalk and bike path adjacent to and running the full length of the beach; the Greenbelt, which is the pedestrian path running the length of the City between Valley Drive and Ardmore Avenue, and City-owned public parking lots. Smoking had already been prohibited on the beach, in city buildings and inside of restaurants.
2. **Polystyrene and Plastic Bag Ban Ordinances:** The City enforces a Polystyrene Ordinance adopted in 2012 banning polystyrene food service ware, and a plastic Bag

Ban ordinance prohibiting single-use plastic bags in the City. In addition, the City offers free reusable shopping bags at many of its public outreach events.

3. **Enhanced Trash Control for Special Events:** The City has instituted a matrix of trash control requirements for special events in the City. The requirements have been phased in over three years and are tiered based on the size of the event. The requirements include measures to: 1) Reduce waste and single-use items, 2) Limit and reduce the size of handouts and flyers, 3) Control litter, contain wastes and prohibit hosing of surfaces 4) Increase recycling and solid waste diversion rates, and 5) Provide educational outreach to the public.
4. **Residential Trash Control:** The City's waste hauler contract institutes a "pay as you throw" program for residents where rates are based on the volume of trash disposed of. This program provides residents with water-tight containers with lids for their waste and reduces the propensity for ineffective containment of trash, litter and discharge by offering free recycling.
5. **Additional Trash Receptacles:** In addition to placement of refuse containers at transit stops and in parks, the City has placed over 100 recycling bins for beverage containers throughout the City, at all bus stops, in heavily-used pedestrian areas and parks.
6. **Enhanced Street Sweeping:** Streets are swept weekly and posted with no parking on street sweeping day signs.
7. **Public Outreach**: The City hosts an annual Coastal Cleanup Day sponsored by Heal the Bay at the Hermosa Beach Pier. Volunteers gather at the Hermosa Pier to help clean up the beach as part of a nationwide effort. In addition, the City distributes outreach materials on proper waste management, including proper disposal of household and construction wastes.
8. **Commercial Businesses:** The City has ongoing efforts to reduce potential sources of trash in the coastal and marine environment. The City has conducted a public outreach program targeted at businesses in conjunction with increased and progressive enforcement through education, warnings and citations to reduce the generation and discharge of trash. The City conducts Clean Bay Certified (CBC) annual inspections of restaurants and other food service establishments in the City. The CBC program is sponsored by the Bay Foundation and has received approval from the Executive Officer of the Regional Board. Of the 45 individual CBC inspection checklist items, 10 are specifically related to prevention and control of trash.

16th Street Storm Drain System Upstream of Hermosa Valley School

Optimal Location for siting a Centralized High Flow Device at Hermosa Valley School along the 16th St. Storm Drain.

Hermosa Strand Infiltration Trench Tributary Storm Drain System

Herondo Regional Project Tributary Storm Drain System

Optimal location identified for siting a Centralized High Flow Device within the Herondo Storm Drain tributary area, if needed.

Figure 1: Hermosa Beach Storm Drain System

Storm Drain Facilities

- Manhole
- Inlet
- Local Outfall
- Outfall
- Infiltration Basin
- Pump Station
- Vault
- Well

Storm Drain Pipes

- City Owned
- County Owned
- Catchment Areas