Consideration of Extension of Final TMDL Implementation Deadlines for Certain TMDLs in the Los Angeles Region

November 2020

Revised February 2021

Final March 11, 2021

Table of Contents

Tables

Appendix Tables

A. Introduction

1. Purpose of report

This report evaluates whether extensions of certain Total Maximum Daily Load (TMDL) implementation deadlines are justified. In particular, this report focuses on nine TMDLs (1) being implemented in Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permits in the Los Angeles Region, (2) which have approaching implementation deadlines that may not be met, and (3) for which MS4 permittees have requested extensions.

This report considers the positive impact of the passage of Measure W in Los Angeles County, creating the Safe Clean Water Program (Safe Clean Water Program), on MS4 permittees' ability to meet TMDL deadlines and the negative fiscal impact of the COVID-19 pandemic on MS4 permittees' ability to meet near-term TMDL deadlines.

TMDLs and their requirements, including implementation deadlines, can be reconsidered by the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) at any time. TMDLs adopted by the Los Angeles Water Board include programs of implementation (also commonly referred to as TMDL implementation plans). Many TMDL implementation plans include schedules for implementation that are many years long and, as such, reconsiderations of TMDLs to modify the plans as local conditions change and lessons are learned are sometimes appropriate and necessary.

At this time, due to a particular combination of issues – the pending issuance of a new regional MS4 permit, the imminent final deadlines for certain TMDLs, the new sources of funding for stormwater projects created by the Safe Clean Water Program and Measure CW in Culver City, and the recent fiscal impacts due to the novel coronavirus disease (COVID-19) pandemic – this report considers the implementation schedule and final deadlines for nine TMDLs.

The focus of this report is on the TMDLs with approaching final deadlines in the next one to three years. TMDLs with final implementation dates further out, such as the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL and the Los Cerritos Channel Metals TMDL, which both have a final implementation deadline of September 30, 2026, are not being considered at this time. The Los Angeles Water Board may, over time, reconsider these and other TMDLs and their implementation deadlines.

Additionally, this report does not evaluate extensions for dry weather-related TMDL deadlines. An extension of dry weather-related deadlines is not warranted because the prohibition on non-stormwater discharges has been in place in MS4 permits since the 1990s, and permittees have had success complying with, or are approaching compliance with, most dry-weather deadlines.

Finally, this report does not evaluate extensions of interim implementation deadlines. There are very few upcoming interim implementation deadlines related to wet-weather WLAs assigned to MS4 discharges; most of these interim deadlines have already passed.

This report will examine four bacteria TMDLs, two toxics TMDLs, one metals TMDL and the program of implementation for two nutrients TMDLs.

The Bacteria TMDLs include:

Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL
Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL
Malibu Creek and Lagoon Bacteria TMDL
Santa Monica Bay Beaches Bacteria TMDL

The Toxics and Metals TMDLs include:

Ballona Creek Estuary Toxic Pollutants TMDL
Ballona Creek Metals TMDL
Marina del Rey Harbor Toxic Pollutants TMDL

The Nutrient TMDLs include:

Malibu Creek Watershed Nutrients TMDL
Malibu Creek and Lagoon Sedimentation and Nutrients TMDL to Address Benthic Community Impairments

2. Assumptions and Limitations of Analysis

The analysis and the recommendations in this report have largely been based on monitoring data collected by MS4 permittees and the plans and reports that MS4 permittees have prepared including Watershed Management Programs (WMPs), Enhanced Watershed Management Programs (EWMPs), Stormwater Investment Plans (SIPs) prepared pursuant to the Safe Clean Water Program, TMDL Implementation Plans, the Stormwater Resource Plan developed by Ventura County MS4 permittees, and MS4 Permit Annual Reports. The analysis is limited by assumptions and uncertainties inherent in those plans and reports. Other sources of information included presentations to the Los Angeles Water Board by MS4 permittees.

Notably, staff attempted to derive outside estimates of the time needed to complete the remaining projects identified in the MS4 permittees' watershed plans (WMPs, EWMPs, TMDL implementation plans, etc.) for the watersheds addressed herein. These estimates are predicated on (i) the specific set of projects identified in these plans, (ii) the planning level cost estimates to implement these projects, and (iii) estimates of dedicated revenue available through the Safe Clean Water Program along with a few other dedicated revenue sources. Each of these variables is uncertain. The first -- the specific set of projects -- is subject to modification through the adaptive management process in the current MS4 permits. Under the 2012 Los Angeles County MS4 Permit, MS4 permittees have used this process advantageously to modify the suite of projects to be implemented and thus, significantly reduce the planning level cost estimates. The second variable -- the planning level cost estimates -- is uncertain both because it is dependent on the first variable and because the cost estimates are planning level estimates that are generally conservative and based on unit cost factors. The estimates generally do not consider site specific characteristics such as infiltration rates, which can significantly affect the size of the project and thus its cost. There are several examples under the 2012 Los Angeles County MS4 Permit of projects for which the cost estimate decreased substantially once additional field reconnaissance was done. Finally, the estimates of funds available to

implement projects does not consider all available funding sources, rather it focuses on dedicated revenue, particularly from the Safe Clean Water Program and Measure CW, and an estimate of matching funds. Due to the uncertainties and conservatism inherent in each of these variables the resulting time estimate is very imprecise and, in some cases, illogical.

Nevertheless, for transparency, this analysis is presented below for each TMDL. However, due to the uncertainties and imprecision of the variables used in the analysis and thus the result, staff did not rely on these time estimates in making the recommendations for deadline extensions. Rather, staff relied more heavily on the following TMDL- and watershed-specific factors: the status of water quality and beneficial use impacts, progress on implementing projects considering the length of the original TMDL implementation schedule, and the projects that remain to be implemented along with federal guidance that states TMDL implementation plans, including schedules, should be sufficient to achieve WLAs in a reasonable period of time. Staff also weighed more heavily the economic forecasts regarding the length of economic impacts due to the COVID-19 pandemic.

3. Background on TMDLs and Permits

a. TMDLs

Section 303(d) of the federal Clean Water Act (CWA) requires states to identify waters where technology based effluent limitations alone are not stringent enough to implement the water quality standards set for that waterbody. Every two years, states are required to submit this list of impaired waters to the United States Environmental Protection Agency (US EPA) for approval. This is known as the 303(d) list. Per section 303(d) of the CWA, states must establish TMDLs for the pollutant(s) causing the water quality impairment in the waterbody.

A TMDL includes the calculation of the maximum amount of a pollutant allowed to enter a waterbody such that the waterbody will meet, and continue to meet, water quality standards for that pollutant. A TMDL determines the waterbody's loading capacity and determines the pollutant load reductions necessary. When the total maximum daily load has been determined, portions of that load are allocated to different sources or permittees. These allocations are referred to as Waste Load Allocations (WLAs) for point sources and Load Allocations (LAs) for non-point sources.

Per US EPA guidance (US EPA, 1991), a TMDL includes the load calculations, determinations of WLAs and LAs, and also identification of seasonal variations and a critical condition, linkage analysis and other technical assessments. In California, Water Code Section 13242 requires that a TMDL also include a program of implementation and a schedule for implementation with final dates by which the waterbodies must attain water quality standards. US EPA guidance states that TMDL implementation plans should be sufficient to attain WLAs and LAs in a reasonable period of time (US EPA, 2000).

b. TMDLs in permits

TMDLs, including their implementation plans, are most often adopted as amendments to the Los Angeles Region's Water Quality Control Plan (also known as the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties or, simply, the Basin Plan).

When adopted in this manner as water quality regulations, the TMDLs are not self-implementing. To implement the TMDL, the WLAs and LAs are incorporated into permits or other orders, typically in the form of a water quality-based effluent limit. US EPA has established regulations (40 CFR §122.44(d)(1)(vii)(B)) requiring that water quality-based effluent limits in NPDES permits, including MS4 NPDES permits, be consistent with the assumptions and requirements of any available WLAs for the discharge prepared by the state and approved by US EPA.

c. TMDL schedules

TMDL schedules allow time for dischargers assigned WLAs or LAs, such as MS4 permittees, to reduce their pollutant loads by implementing additional water quality-based control measures. When a TMDL along with its implementation plan is adopted by the Los Angeles Water Board, the WLAs and LAs are incorporated into permits (including NPDES permits, Waste Discharge Requirements or Conditional Waivers of Waste Discharge Requirements), including the schedule for achieving the WLAs and LAs. Some TMDLs in the Los Angeles Region have been established by US EPA. US EPA established TMDLs do not include a program of implementation or a schedule of implementation, and, unless the Los Angeles Water Board has adopted a separate TMDL implementation plan including a schedule, dischargers must attain their applicable WLAs and LAs upon permit adoption.

The TMDL schedules are set with an understanding of the sorts of implementation methods and actions that will be needed and the estimated cost of implementing these actions. When developing a TMDL, the Los Angeles Water Board considers the necessary pollutant reductions and the reasonably foreseeable methods of compliance with those reductions, taking into account a reasonable range of environmental, economic, and technical factors (23 CCR § 3777(b) and (c)). When developing the TMDLs, including those addressed in this report, these considerations are made in consultation with stakeholders. The TMDLs, including proposed schedules, are noticed for public comment and the comments are considered and addressed as appropriate prior to the Los Angeles Water Board's adoption of the TMDL. Federal regulations require States to incorporate implementation plans for TMDLs into the State Water Quality Management Plan (40 CFR § 130.6(c)(1)). (In California, for purposes of TMDL incorporation, the State's Water Quality Management Plan is the individual Regional Water Board's Basin Plan.) As noted earlier, US EPA guidance states that implementation plans must be sufficient to implement all WLAs and LAs in a TMDL in a reasonable period of time (US EPA, 2000).

Water Code § 13377 requires all NPDES permits to implement the applicable Basin Plan, including applicable TMDLs and their schedules of implementation. TMDL implementation schedules are incorporated into NPDES permits as compliance schedules. 40 CFR § 122.47 requires that compliance schedules achieve compliance with the CWA and regulations as soon as possible, and not later than the applicable statutory deadline under the CWA. This regulation has been interpreted by US EPA as meaning that an NPDES permitting authority may only include a compliance schedule in an NPDES permit when the state's water quality standards or regulations include a provision that authorizes such schedules. (See In re Star-Kist Caribe, Inc., (Apr. 16, 1990) 3 E.A.D. 172, 175, modification denied, 4 E.A.D. 33, 34 (EAB 1992.).) For MS4 permits,

the TMDL and/or implementation plan is the applicable regulation authorizing the compliance schedule.[1] Therefore, any compliance schedules based on a TMDL implementation plan cannot exceed the maximum time that the implementation plan allows. (See also Wat. Code §§ 13263, 13337).

4. TMDLs in the MS4 permits

a. TMDLs in MS4 permits

MS4 discharges in the Los Angeles Region are currently regulated under three MS4 permits, one which covers Los Angeles County with the exception of the City of Long Beach (Los Angeles County MS4 Permit), one for Ventura County (Ventura County MS4 Permit) and one for the City of Long Beach (Long Beach MS4 Permit). The Los Angeles Water Board intends to issue a new regional MS4 permit incorporating requirements for all the permittees covered by the current three permits (Regional MS4 Permit). Los Angeles Water Board staff released a working proposal of the Regional MS4 Permit (Working Proposal of Regional Phase I MS4 Permit or Working Proposal) in December 2019 to all 99 MS4 permittees covered under the current three MS4 permits, and several key stakeholders to receive input on the development of a tentative permit. Los Angeles Water Board staff released the tentative Regional MS4 Permit on August 24, 2020 for public comment (LARWQCB, 2020a).

The tentative Regional MS4 Permit includes requirements to implement US EPA and Water Board water quality control plans and policies, including established TMDLs. There are 45 TMDLs included in the tentative Regional MS4 Permit. TMDL implementation schedules, including final deadlines, cannot be changed through any mechanism in the MS4 permit itself. This is because NPDES permits must implement the Basin Plan, and as noted above, must also be consistent with the assumptions and requirements of available WLAs in TMDLs. Requirements of available WLAs include schedules of implementation. However, if TMDLs are reconsidered through the Basin Plan amendment process, and implementation schedules changed, then any NPDES permit, including an MS4 permit can be updated to reflect the new schedule.

b. TMDLs with approaching final compliance dates

Of the 45 TMDLs in the tentative Regional MS4 Permit, there are a number which are approaching the end of their established implementation schedules, meaning the final WLAs and numeric targets must be met.

TMDLs with final implementation deadlines in the next one to three years are included in Table 1. These deadlines are included in the 2012 Los Angeles County MS4 Permit and the 2010 Ventura County MS4 Permit, which the permittees are currently subject to.[2]

---

[1] For NPDES permits that include effluent limitations established under CWA section 301(b)(1)(C), the Compliance Schedule Policy is the state regulation that authorizes the Regional Water Board to include compliance schedules in permits.

[2] Note that the City of Long Beach is not subject to any of the nine TMDLs being evaluated here.

Table 1 TMDLs with final implementation deadlines between 2021-2023

TMDL	TMDL Effective Date	Final Compliance Date (Deadline)	Length of Implementation Period
Ballona Creek Bacteria TMDL *wet weather*	April 27, 2007	July 15, 2021	14 years, 3 months
Marina del Rey Bacteria TMDL *wet weather*	March 18, 2004	July 15, 2021	17 years, 4 months
Malibu Creek Bacteria TMDL *wet weather*	January 24, 2006	July 15, 2021	15 years, 6 months
Santa Monica Bay Bacteria TMDL *wet weather*	July 15, 2003	July 15, 2021	18 years
Ballona Creek Estuary Toxics TMDL	January 11, 2006	Metals, Chlordane and DDTs: January 11, 2021	15 years
		PCBs: January 11, 2025	19 years
Ballona Creek Metals TMDL *wet weather*	January 11, 2006	January 11, 2021	15 years
Marina del Rey Toxics TMDL	March 22, 2006	Back Basins: March 22, 2018	12 years
		Front Basins: March 22, 2021	15 years
2003 Malibu Creek Nutrients TMDL	March 21, 2003	Above Malibou Lake: December 28, 2021	18 years, 9 months
		Below Malibou Lake: December 28, 2017	14 years, 9 months
2013 Malibu Creek Nutrients and Sedimentation TMDL (below Malibou Lake) (Los Angeles County)	July 2, 2013	December 28, 2023	10 years, 6 months

The four bacteria TMDLs have a final implementation deadline of July 2021. All these waterbodies must meet all bacteria requirements, in dry weather and wet weather, by July 15, 2021. The bacteria TMDLs were established in 2003, 2004, 2006, and 2007 and were established with implementation schedules of 14 to 18 years.

The three TMDLs for toxic pollutants and metals are also approaching final implementation deadlines in 2021 and 2023. These three TMDLs were all established in 2006 and included implementation schedules of 12 to 19 years. The two nutrient TMDLs, applicable to the Malibu Creek Watershed, require attainment of the final WLAs by 2021 or 2023. These deadlines provided periods of 10½ to 18¾ years to implement these two TMDLs.

c. MS4 Permittee Requests for TMDL Extensions

Since adoption of these TMDLs, and implementation under the 2012 Los Angeles County MS4 Permit and 2010 Ventura County MS4 Permit, permittees have requested that the Los Angeles Water Board reconsider some of these TMDL schedules.

Several of the Los Angeles County MS4 permittees have raised the issue of the availability of funds under the Safe Clean Water Program. Now that there is a more clear funding path, some permittees have suggested the utility of aligning final implementation dates with the speed at which permittees will be able to complete necessary projects per the funding available through the Safe Clean Water Program.

As of May 5, 2020, the Los Angeles Water Board had received twenty-two (22) comment letters on the Working Proposal. Thirteen (13) of these twenty-two comment letters included a request to align TMDL implementation deadlines with the availability of Safe Clean Water Program funds. Comments focused on the approaching final implementation deadlines for the TMDLs in Table 1 in particular.

In addition, permittees sent separate letters to request an extension of the Los Cerritos Channel Metals TMDL deadlines. The Ventura Countywide Stormwater Quality Management Program, representing the 12 MS4 permittees in Ventura County, submitted a letter dated August 21, 2020, requesting that the Los Angeles Water Board also consider deadline extensions for certain TMDLs in Ventura County.

In addition, at the May 14, 2020 Board meeting as well as several other meetings, a number of permittees requested that the Board consider time extensions for these and other TMDL deadlines based on the availability of Safe Clean Water Program funds and the financial impacts of the COVID-19 pandemic (LARWQCB, 2020).

5. Organization of Staff Report

This Staff Report presents:

- The criteria that Board staff considered to evaluate TMDL schedule extensions;
- A discussion of potential fiscal impacts of the COVID-19 pandemic;
- A quantitative/qualitative analysis of current water quality and progress toward achieving WLAs for each TMDL;
- A rough time estimate to complete the remaining projects to comply with each TMDL based on the proposed projects, planning level cost estimates, and anticipated revenue from the Safe Clean Water Program along with a few other dedicated revenue sources and matching funds; and
- Recommendations based on these analyses, which may include: no changes to schedules, Basin Plan amendments to extend the schedules, Time Schedule Orders (TSOs), or a combination of Basin Plan amendments and TSOs.

B. Criteria for Evaluating TMDL Schedule Extensions

To determine for each TMDL whether it would be justified to extend the final TMDL deadline, staff analyzed whether meaningful progress has been made in meeting the TMDL, which projects and programs have been completed and/or initiated, and which projects are planned and included in WMPs and EWMPs, SIPs for the Safe Clean Water Program, and, in the case of Ventura County, identified in TMDL Implementation Plans or the Stormwater Resource Plan developed by Ventura County MS4 permittees. For

each watershed area, staff also considered the availability of Safe Clean Water Program funds along with matching funds and a couple other dedicated funding sources.

Additionally, for all nine TMDLs addressed in this report, staff has considered the impacts of the COVID-19 pandemic and the associated projections of economic impacts in Section D.

As noted earlier, this report does not evaluate extensions for dry weather-related TMDL deadlines. An extension of dry weather-related deadlines is not warranted because the prohibition on non-stormwater discharges has been in place in MS4 permits since the 1990s, and permittees have had success complying with, or approaching compliance with, most dry-weather deadlines.

For each TMDL, staff has evaluated the following TMDL-specific factors to determine whether changes to the TMDL implementation schedule may be justified:

a. Water quality status and whether water quality improvement is still needed. If the waterbody is meeting standards, no extension of the TMDL deadline is needed. Additionally, if significant water quality improvement is still needed as the final deadline approaches, there is an urgency to addressing ongoing beneficial use impacts that is factored into the proposed extensions.

b. Whether meaningful implementation progress has been made by responsible permittees, considering the time allowed per the original TMDL implementation schedule. For each TMDL, staff evaluated whether:

    i. Permittees have implemented projects identified in WMPs/EWMPs and SIPs and, in the case of Ventura County, identified in TMDL Implementation Plans or the Stormwater Resource Plan developed by Ventura County MS4 permittees. Staff's analysis focused on projects that would directly improve water quality.

    ii. Permittees have begun planning and design of projects in WMPs/ EWMPs and SIPs and, in the case of Ventura County, identified in TMDL Implementation Plans or the Stormwater Resource Plan that will continue to make improvements in water quality.

c. Estimates of how much time the remaining required actions may take in a particular watershed or subwatershed. For this, staff considered current project commitments, MS4 permittee input on the time to implement a project from design to completion, available planning level cost estimates, and the amount of dedicated funding. Specifically, staff considered testimony from Los Angeles County Public Works staff and other permittees at Board meetings and workshops over the past year that TMDL implementation projects can take from five to seven years per project from design to completion (LARWQCB, 2020). Assuming that design takes 1-2 years, 3-5 years is needed for construction. With this in mind, staff identified the remaining required actions per the WMPs/EWMPs and estimated a timeframe based on the availability of funding from, primarily, the Safe Clean Water Program along with estimates of matching funds and a few other dedicated funding sources.

Regarding the last factor, as discussed in Section A.2 above, these estimates of time are imprecise. There is significant uncertainty with the variables used to make these estimates. Nevertheless, these time estimates based on the availability of Safe Clean Water Program funds and planning level cost estimates in WMPs/EWMPs are presented below for each TMDL. However, due to the uncertainties in the variables required for these estimates and thus the estimates themselves, these time estimates were not relied on to make the recommendations below for final deadline extensions.

C. Alternatives Considered

For each TMDL, the Board may choose to either maintain the current final deadline or extend the final deadline. Each TMDL was developed to restore impaired waters, attain water quality standards, and protect human health, aquatic life, and the environment. The original implementation schedules, which ranged from 10 to almost 19 years, were determined in consultation with stakeholders, including MS4 permittees, and were not short schedules.

If the Los Angeles Water Board determines that the TMDL-specific analysis supports allowing more time beyond the current TMDL final deadlines, and/or that consideration of COVID-19-related impacts warrants allowing more time beyond the TMDL final deadlines, the Los Angeles Water Board has several options for providing additional time to achieve WLAs and the underlying water quality standards. These options include Basin Plan amendments (BPAs) to revise the TMDL implementation schedules, time schedule orders (TSOs), and a combination of BPAs and TSOs. Each of these is briefly described below.

1. Basin Plan Amendments

The first option is to amend the Basin Plan to revise TMDL implementation schedules and then incorporate these revisions into the MS4 permit.

As noted earlier, the TMDL implementation schedules set forth in the Basin Plan cannot be extended through a permitting action like adoption or revision of the MS4 permit. However, the Board can revise the schedule in the Basin Plan and then compliance schedules in permits can be revised consistent with the amended implementation schedule in the Basin Plan.

Revising TMDLs through Basin Plan amendments is a regulatory action, which requires adoption by the Los Angeles Water Board and then approval by the State Water Resources Control Board (State Water Board) and the State Office of Administrative Law (OAL).

Given the anticipated timing of the Board's consideration of the tentative Regional MS4 Permit, under this option, Board staff would incorporate both the original and the revised compliance schedules into the tentative permit. Once approved by the State Water Board and OAL, the revised compliance schedule would become the operative one in the permit.

2. Time Schedule Orders

TSOs can also be issued to permittees subject to the imminent TMDL compliance deadlines. Compliance with a TSO will, in some instances, limit the imposition of penalties

under the Water Code for violations of certain numeric effluent limitations, including TMDL-based effluent limitations. (Wat. Code § 13385(j)(3).)3 The penalty protections provided through a TSO are time limited. In general, TSOs must be as short as possible and may not exceed five years, though, in some cases, TSOs may be extended for an additional five years (for a total of ten years) if certain criteria are met. In several cases in the past, TSOs have been issued to dischargers to allow time for additional implementation in order to meet permit requirements implementing final TMDL deadlines.

3. A Combination of Basin Plan Amendments and Time Schedule Orders

The third option is a combination of Basin Plan amendments and TSOs. There are different ways to arrange this combination. One way is for the Board to extend the existing implementation schedules through Basin Plan amendments for certain TMDLs while retaining the existing implementation schedules and issuing TSOs to provide time beyond the existing implementation schedules for other TMDLs. Another way is for the Board to provide limited extensions to TMDL implementation schedules through Basin Plan amendments and provide additional time beyond the limited extensions with TSOs, if appropriate in the future. When determining whether to adopt Basin Plan amendments, issue TSOs, or implement some combination of both, staff has examined the factors described in Section B of this report to determine if meaningful progress has been made in meeting the TMDLs as well as the fiscal impacts of COVID-19 as discussed in Section D. As described in Section E, staff considered the regulatory history of the TMDLs, the existing implementation schedules, current water quality, and plans and progress towards achieving the TMDLs. Staff also evaluated the availability of funding.

D. Fiscal Impacts of COVID-19

The COVID-19 pandemic and the ensuing stay-at-home orders have markedly impacted the economy at the national, state, and local levels. Society is incurring significant costs in healthcare and lost lives. Businesses have struggled amid reduced consumer demand. This has in turn led to reduced revenues for state and local governments. Concerns regarding the economic and fiscal impacts of COVID-19 on local governments' ability to implement MS4 permit requirements, including TMDL related requirements, have been raised by the Board and permittees over the last several months. While these impacts, which began approximately eight months ago in mid-March 2020, are recent in comparison to the 10 - to 21-year TMDL implementation schedules, Board staff recognize that the economic impacts are particularly significant where there is only a short time remaining before a final TMDL deadline, since the economic impacts are likely to last for a few years. As such, Board staff has considered this unexpected development in the evaluation of these TMDL schedule extensions.

[3] All futures references to TSOs in this staff report are to TSOs issued pursuant to section 13385(j)(3) of the Water Code.

1. Overview of current COVID-19 status

Fall has brought with it the highest overall daily numbers of new coronavirus disease (COVID-19) cases in the U.S., and forecasts show that the nationwide trend will continue upward into the winter. Much of California, including Los Angeles County and Ventura County, have also seen overall increases in new cases, though at a lower rate than the nation overall. However, there recently has been good news that Pfizer's trial vaccine may be authorized for emergency use and sent to high-risk groups as soon as December. Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, hopes that all Americans will have access to the vaccine in April, May, and June (Choi and Smith, 2020). Until most people are vaccinated and for some period afterward, the economy will continue running at diminished capacity. Although there has been some job recovery, the latest official unemployment rates from the federal government show an October unemployment rate of 6.9% in the U.S and a September unemployment rate of 11.0% in California, in comparison to long-term averages of 5.76% and 7.26%, respectively (U.S. Department of Labor, 2020a; U.S. Department of Labor, 2020b; U.S. Department of Labor, 2020c).

Earlier this year, the Coronavirus Aid, Relief and Economic Security (CARES) Act mitigated the economic impact of the pandemic, but aid expired at the end of July. The $2 trillion relief package included a one-time payment of $1,200 to eligible adults and $500 to eligible children. It also expanded unemployment benefits by paying an additional $600 per week. Parolin et al. (2020) found that the CARES Act kept poverty rates close to pre-pandemic levels, but without continued federal support, poverty and hardship would likely increase. After Congress failed to reach a deal for new coronavirus aid, President Trump issued an executive order in August to extend federal unemployment benefits, but the weekly payment was reduced to $300, and funding only lasted about one month (Cohen and Tsu, 2020). Federal Reserve Chairman Jerome Powell recently cautioned Congress that the longer the recession, the longer lasting the damage from the downturn for lower-income workers. Job losses for African Americans, Hispanics, and women have been greater than that of other groups. He said, "If not contained and reversed, the downturn could further widen gaps in economic well-being that the long expansion had made some progress in closing" (Smialek, 2020).

Diminished economic activity is expected to continue in the U.S. until a vaccine is developed and for some period afterward. While the biggest shock to the economy occurred in March as cases skyrocketed and California and other states issued their first shelter-at-home orders, summer and fall resurgences showed that reopening businesses without proper precautions leads to significant healthcare costs and lost lives. As of mid-November, the U.S. has had more than 10 million reported coronavirus disease cases and more than 240,000 COVID-19 deaths. With more precautions in place, relative to the rest of the nation the rate of new infections has been lower in California while certain businesses have been able to operate. However, consumer demand will continue to remain lower than pre-pandemic levels as many consumers are reluctant to put themselves at risk. While the true magnitude of COVID-19 costs may change over time, it is certain that the U.S. will incur substantial costs until a vaccine and/or antiviral therapies are widely available.

2. Economic Outlook

US Economic Outlook

The Federal Reserve recently published its economic outlook in September, which was more optimistic than its June outlook. The central bank forecasted an unemployment rate of 7.6% at the end of 2020, 5.5% in 2021, and 4.6% in 2022 (Federal Reserve, 2020). The Bureau of Labor Statistics (BLS) recently reported that the unemployment rate declined to 6.9% in October 2020, noting job gains in leisure and hospitality, professional and business services, retail trade, and construction (U.S. Department of Labor, 2020a). In February 2020, before the first shelter-at-home orders were issued, the unemployment rate was only 3.5%. Full employment has traditionally been considered at around 95%, or a 5% unemployment rate.

In an October survey of about 30 macroeconomists by FiveThirtyEight, results indicated about a 66 percent probability that the economy would not return to pre-COVID-19 levels until 2022 or later (Thomson-DeVeaux, 2020). Results from a survey of 235 members of the National Association of Business Economics offer a similar projection, with almost half of respondents estimating that economic recovery to pre-COVID-19 levels would occur in the second half of 2022 or later (National Association for Business Economics, 2020).

California Economic Outlook

As shown in Table 2, compared to the Federal Reserve's outlook for the nation, California's Legislative Analyst's Office (LAO) in May forecasted a slower recovery for the state, with an estimated unemployment rate of 11.5% in 2020, 11.5% in 2021, and 10.1% in 2022 (California Legislative Analyst's Office, 2020). UCLA Anderson Forecast in September was more optimistic, with an unemployment rate of 10.8% in 2020, 8.6% in 2021, and 6.6% in 2022 (UCLA Anderson Forecast, 2020). Due to the globalized nature of California's economy, UCLA Anderson Forecast predicts that California will have a slower recovery in leisure and hospitality and retail from the drop in international tourism, as well as a slower recovery in transportation and warehousing from the U.S.-China trade war negatively affecting the state's ports. However, California should recover faster than the U.S. in business, scientific and technical services, and in the information sector.

Table 2 Unemployment rate forecasts

Year	National	California	
	U.S. Federal Reserve	California Legislative Analyst's Office	UCLA Anderson Forecast
2020	7.6%	11.5%	10.8%
2021	5.5%	11.5%	8.6%
2022	4.6%	10.1%	6.6%

Southern California and Los Angeles Region Economic Outlook

Southern California is expected to be hit harder than Northern California, as Southern California's economy depends more on jobs that are vulnerable to the pandemic. As described in Section 0.2.c, these jobs considered vulnerable are in leisure, entertainment, and transportation and warehousing. Overall, 37.4% of California's jobs are vulnerable.

The share of vulnerable jobs in Los Angeles and Ventura County is 39.9% and 40%, respectively. The shares of vulnerable jobs in Sacramento and most Bay Area counties are lower than the overall state average (McKinsey & Company, 2020). The number of permanent business closures has continued increasing since March, with about 7,500 businesses closed in the Los Angeles metropolitan area as of September (Yelp, 2020). For now, California renters and small landlords have some protections against evictions and foreclosures until February under AB 3088, which will help mitigate the economic fallout.

In addition, the national disproportionate impacts of COVID-19 on African Americans and Latinx applies to the Los Angeles region as well, with additional disproportionate impacts on the local Pacific Islander population (Lin II, 2020). Their existing disadvantages in resources are now exacerbated by the pandemic, and these communities will likely take longer to recover unless systemic inequalities are addressed, and special considerations are prioritized for these communities.

3. Impacts on funding

Due to diminished economic activity resulting from the pandemic, municipalities face significant budget cuts as revenue from sales and property taxes has declined. With consumers spending less and far fewer people traveling to Southern California for tourism or business, sales and hotel tax revenues to municipalities have likewise been reduced. The Southern California Association of Governments (SCAG) estimated in May that taxable sales may decrease by 26% to 38% through 2021 (Southern California Association of Governments, 2020). Property taxes are expected to be a more stable revenue source, though they are also expected to be reduced. Therefore, cities that rely more heavily on property taxes will fare better through the pandemic, though they are already likely to be wealthier in general than cities that rely more on sales tax (Christopher, 2020).

The pandemic's economic impacts largely affect general funds, which present a limited and less reliable source of revenue. Permittees are compelled more than before to identify alternative sources such as fees and assessments. Revenue from these sources may also decrease, but Permittees in the Los Angeles Region have taken steps to establish a relatively stable funding source based on parcel taxes or fees, which will help fund stormwater projects despite the current economic downturn. Examples of such efforts include:

- LA County's Safe Clean Water Program (Measure W), which raises up to $285 million annually.
- LA County's Safe, Clean, Neighborhood Parks and Beaches Measure (Measure A): the measure's Category 3, the Protecting Open Space, Beaches, and Watersheds Program, has about $7.4 million annually for projects that capture stormwater and protect drinking water and waterbodies.
- Culver City's Clean Water, Clean Beach Parcel Tax (Measure CW), which raises about $2 million annually.
- Ventura County's Benefit Assessment Program, which raises about $3 million annually.

4. Vaccine Timeline

With the recent news of Pfizer's trial vaccine being 90% effective, it may be authorized for emergency use and sent to high-risk groups as soon as December. Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, hopes that all Americans will have access to a vaccine in April, May, and June (Choi and Smith, 2020). It is also possible that there will be more than one effective vaccine. Economic recovery is highly contingent on development and distribution of the vaccine, as "herd immunity" (also referred to as "population immunity") will allow businesses, schools, and social events to fully reopen and generate economic activity. It has been promising that extraordinary efforts have been put towards a vaccine, and processes that normally take years have been only taking months. There are currently over 130 vaccines in development. Twelve are currently in Phase III trials, the final phase before approval, and a total of six vaccines have been approved for early or limited use in China, Russia, and the United Arab Emirates, though experts caution that these early vaccines are risky (Curum et al., 2020). Until the majority of the general public is vaccinated, the development and distribution of effective antiviral therapies could also mitigate health and economic impacts of COVID-19.

The federal government has so far struck a contract with Pfizer to work together to distribute 100 million vaccine doses (Bump, 2020). This agreement is separate from the U.S. Government's Operation Warp Speed, which is providing funding for six other vaccine candidates to begin mass production at the same time as clinical trials so that millions of doses will be immediately ready for distribution upon approval.

While Dr. Fauci's projection of widely available vaccines in the spring of 2021 is quite promising, there is still uncertainty as to complications that may arise in the distribution supply chain and the level of public trust in the vaccine, which would affect when the general population would achieve herd immunity. The measures that the government takes in establishing a smooth supply chain and maintaining public trust will affect the timeline of the economic recovery.

5. Uncertainty

The main factors that create uncertainty for the economic outlooks described above are the timeline of development and distribution of vaccines and/or antiviral therapies, federal government actions, and state and local actions. These factors are discussed in detail below.

6. Government Actions

Federal Government Actions

Congressional authorization of new pandemic relief funding to consumers, businesses, and state, local, and tribal governments would enable the economy to recover more quickly, but it is unclear whether such authorization will happen soon. It is also unclear how much funding would be agreed upon if Congress were to reach a deal. While imperfect, the CARES Act provided an economic safety net for most Americans up until the end of July. Without passage of another COVID-19 relief bill, the country will experience more economic damage that will take longer to recover from. Some

businesses will continue closing for good and an increasing number of people will be unable pay their rents and mortgages. This will likely cause businesses and workers to feel compelled to go back to work even if it is unsafe to do so, which could lead to continuing new coronavirus disease cases and society incurring mounting healthcare costs and lost lives.

The CARES Act also provided for $150 billion for state, local, and tribal governments. However, many governors, including Governor Newsom, expressed that this was insufficient. In May, California joined with four other Western states in requesting $1 trillion in pandemic relief for all state, local, and tribal governments. Additional relief funding is crucial because people depend more heavily on state and local services during times of economic distress. There is consensus among economists that funding to states passed in response to the 2008 Great Recession helped speed up the economic recovery.

State and Local Actions

The manner in which states and municipalities handle the pandemic will also heavily affect the speed of economic recovery. Currently all states have reopened businesses to varying degrees, and localities within states also have varying rules. Mask-wearing rules also vary throughout the country, but California currently has a statewide mandate. The timing of past and future phases of reopening, as well as the level of compliance with health guidelines, will determine the magnitude of resurgences of COVID-19 cases before one or more vaccines are widely available. Stronger resurgences will prolong the economic impacts as more people get sick or die and states or municipalities may have to pull back on reopening measures.

How states and municipalities encourage and enforce health guidelines, including social distancing and mask-wearing will also affect the spread of the coronavirus disease and therefore the economy. Where there is higher compliance, there will be less transmission, meaning that people can engage in economic activity with less risk of getting sick and forcing businesses to close again.

After development of the vaccine, the speed and distribution of the economic recovery will still depend on state and local actions. Investment in disadvantaged communities would lead to a more equitable recovery, with greater marginal benefits for these communities because they need assistance most. In particular, investment in stormwater infrastructure would not only create jobs, but also have the added benefit of improving community well-being by improving neighborhood aesthetics, recreational opportunities, and regional water quality.

Economic Roundtable found that job stimulus for every $1 million invested in water efficiency projects was greater than traditional Los Angeles industries such as motion picture production and new home construction. The study found that 12.6 to 16.6 annualized jobs in recycled water, groundwater, stormwater, graywater systems, and water conservation projects were created for every $1 million invested. Also, every $1 million invested in stormwater projects in Los Angeles stimulated an estimated $1.99 million in total local sales (Burns and Flaming, 2011). Building on the findings by Economic Roundtable, Los Angeles Alliance for a New Economy estimated that over 30 years, the Safe Clean Water Program will create about 6,530 construction jobs and 1,347 O&M jobs, as well as about 1,559 annual indirect and induced jobs. Furthermore, many

of these jobs created would be good-paying jobs accessible to those in disadvantaged communities (Los Angeles Alliance for a New Economy, 2018). Sustained increases in these occupations depend on Los Angeles' continued stormwater investment in economic times both good and bad.

7. Summary and Recommendations

The COVID-19 pandemic has impacted the economy in many ways. Society is incurring significant costs in healthcare and lost lives. Many remain unemployed despite some job recovery over the summer and into the fall. And most businesses have struggled amid reduced consumer demand. This has in turn led to reduced revenues for state and local governments, which provide services that are needed even more in times of economic distress. The CARES Act mitigated the economic impact for most Americans, but more relief funding is needed. Economists in general predict that full recovery to pre-COVID-19 levels will occur in 2022 or afterwards. Factors contributing to this uncertainty include renewed outbreaks, the timeline of development and distribution of vaccines and/or antiviral therapies, federal funding, and state and local actions. And while many revenue sources to state and local governments have become uncertain, revenue from property taxes will likely be a more stable source. It is unclear whether everyone will pay their taxes during these difficult economic times, but it can be expected that local governments, including the two counties, will at least receive the majority of property tax revenues, which will fund the Safe Clean Water Program and other stormwater measures.

Investing in stormwater infrastructure will provide crucial economic stimulus as well as improve regional water quality and neighborhood environments.

The timeframe predicted by health experts and economists for vaccine development, distribution, and full economic recovery spans until 2022 or later. While during any long implementation period -- 10 to 19 years in the case of the TMDLs considered by this proposed action -- one would expect periods of economic downturn, this downturn comes at a critical juncture for TMDLs with imminent final deadlines. To ensure the ability of permittees subject to these imminent final deadlines to be able to manage the additional fiscal challenge to their ability to build the remaining projects necessary to meet TMDL deadlines, staff recommend that 3 years be added to final deadlines for the wet weather TMDLs with final deadlines in the next one to three years that are analyzed in this report.

All the dischargers subject to TMDLs will experience the fiscal effects of COVID-19, however, there is time for the deadlines which are further in the future to be adjusted at a later time, if necessary, to the degree appropriate.

E. TMDLs Evaluated

Nine TMDLs were evaluated for possible deadline extensions. For each TMDL, a discussion of the regulatory history, existing implementation schedule, current water quality during wet weather, and plans and progress towards achieving TMDLs is presented. Additionally, the availability of Safe Clean Water Program funding along with matching funds and a few other dedicated funding sources is presented. The TMDLs are grouped by watershed below since the analysis of plans and progress as well as the evaluation of available funding is the same for TMDLs in the same watershed. The WMPs

and EWMPs for each watershed include multi-pollutant projects that will implement all TMDLs for the watershed. Sections E.1, E.2, and E.3 cover the Ballona Creek Watershed, Sections E.4 and E.5 cover the Marina del Rey Watershed, Sections E.6 and E.7 cover the Malibu Creek Watershed, and Section E.8 covers the Santa Monica Bay Watershed.

The summaries of water quality data are drawn from the MS4 Monitoring Data Report (LARWQCB, 2020c) and Annual Reports for MS4 permits; see the MS4 Monitoring Data Report and Annual Reports for more detail. Principally, data from the 2012-2013 to the 2016-2017 storm years were used for this summary. This time period coincides with the 5-year permit term of the 2012 Los Angeles County MS4 Permit.

As context for the four bacteria TMDLs evaluated in this report, bacteria TMDLs implemented in the Los Angeles Region use an "exceedance day, reference beach/antidegradation" approach. An exceedance day is any day when water quality sampling shows an exceedance of any single sample of a bacteria indicator, including total coliform, enterococcus, and fecal coliform bacteria (*E. coli* may be used as a surrogate for fecal coliform). The reference beach, or reference watershed, determines the allowable number of exceedance days, such that the TMDL beach or waterway does not exceed the number of exceedance days observed at the reference beach or watershed. The exception to this is where the beach's water quality is better than the reference beach, in which case the existing higher water quality must be maintained. In addition to exceedance days, bacteria TMDLs also require compliance with a geometric mean standard.

To determine if meaningful progress has been made in achieving the TMDLs, staff examined the percent completion of projects identified in WMPs and EWMPs. Staff first examined the control measures identified in the WMPs and EWMPs implementing these TMDLs. Staff then assessed the control measures that have been completed or will be completed in the near term using MS4 Annual Reports, SIPs, and other information. The analysis focuses on the structural control measures needed to achieve compliance with the TMDLs in wet weather and uses volume capture as a surrogate for project completion to ensure consistent comparison.

Staff also attempted to estimate the number of years needed to implement the remaining projects by multiplying the percent project completion by the original WMP/EWMP cost estimates and dividing by the anticipated annual revenue from existing dedicated funding sources. These estimates build off existing analyses conducted by Los Angeles County.

The formula below was used to derive a time estimate for each watershed or subwatershed:

$$Years\ to\ Compliance\ = \frac{Cost\ of\ Remaining\ Projects}{(Annual\ \ Revenue + Annual\ Funding\ Match)}$$

To obtain the cost estimate for the remaining projects to be implemented, the percentage of remaining volume left to be captured was multiplied by the total capital costs estimated in the WMP/EWMPs. The remaining volume accounted for projects implemented to date and likely to be completed in the near-term.

$$Cost\ of\ Remaining\ Projects = \%\ Remaining\ Volume\ \times Capital\ Cost$$

The anticipated annual revenue was based on Safe Clean Water Program funding plus the expected match for this funding as well as a couple of other dedicated funding sources. For each watershed addressed in this report, the amount of Safe Clean Water Program funding available for TMDL implementation was based on the following assumptions:

- 85% of Regional Funds[4] assigned to each watershed will be used for WMP/EWMP projects
- 70% of Municipal Funds will be used for WMP/EWMP projects
- Municipal Funds will be distributed according to the percentage of the municipality in the watershed times the amount of Municipal Funds allocated to the municipality
- Because Watershed Areas under the Safe Clean Water Program do not exactly align with TMDL watersheds, Regional Funds will be distributed according to the percentage of the municipality in the Watershed Area and the percentage in the TMDL watershed.

The expected funding match was calculated by first finding the average ratio of matched funding to Safe Clean Water Program funding for projects included in the 2020 SIPs. The average ratio calculated was 1.03, meaning that the amount of matched funding was on average similar to the requested funding. This ratio was then multiplied by the estimated Safe Clean Water Program revenue for the particular watershed (e.g., Ballona Creek Watershed). For cost estimates, funding, and estimated years to compliance by municipality, see the Appendix.

As discussed in Section A.2, in proposing time extensions, staff relied most heavily on the status of water quality data and beneficial use impacts, progress on implementing projects considering the length of the original TMDL implementation schedule, and the projects that remain to be implemented. Due to the uncertainties and conservatism inherent in each of the variables used to derive a time estimate to complete remaining projects, staff did not rely on the resulting time estimates. See, again, the discussion in Section A.2. These time estimates, which ranged from 11 years to 602 years, are very imprecise and, in some cases, illogical. However, staff did rely on economic forecasts related to the COVID-19 pandemic discussed in Section D and has proposed a 3-year extension for each TMDL based on this consideration.

[4] Under the Safe Clean Water Program, fifty percent of the funds are allocated to the "Regional Program", which consists of projects and programs at the watershed scale to address stormwater from multiple municipalities. These funds are allocated to nine "Watershed Area Steering Committees" that select the projects to be included in the Stormwater Investment Plans (SIPs) for the nine "Watershed Areas". Forty percent of the Safe Clean Water Program funds are allocated directly to municipalities as part of the "Municipal Program" for local storm water projects and programs. Ten percent of the funds are allocated to the "District Program" for administration, a technical resource program, and a stormwater education program.

Federal guidance states TMDL implementation plans, including schedules, should be sufficient to achieve WLAs in a reasonable period of time. The original TMDL schedules for the nine TMDLs ranged from 10 to 21 years. Staff has determined that an extension of no more than 5 years, inclusive of a 3-year extension due to the unanticipated economic impacts of the COVID-19 pandemic, is warranted. The proposed extensions also reflect an understanding that MS4 permittees cannot rely solely on funds from the Safe Clean Water Program in Los Angeles County or the Benefit Assessment Program in Ventura County.

1. Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL

a. TMDL Regulatory History

The Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL was adopted by the Los Angeles Water Board on June 8, 2006 (Board Resolution 2006-011) to address exceedances of bacteria standards to protect human health. The TMDL was approved by the State Water Board on November 15, 2006, the Office of Administrative Law on February 20, 2007, and US EPA on March 26, 2007. The TMDL became effective on April 27, 2007.

This TMDL was revised by the Los Angeles Water Board on June 7, 2012 (Resolution No. R12-008) in order to update certain technical elements. The implementation schedule was not revised. The revised TMDL was approved by the State Water Board on March 19, 2013, the Office of Administrative Law on November 8, 2013, and US EPA on July 2, 2014.

b. TMDL Implementation Schedule

The TMDL required wet-weather WLAs (expressed as exceedance days) and geometric mean WLAs to be achieved in 14 years and 3 months from the effective date (i.e., by July 15, 2021).

c. Water Quality Status

Bacteria water quality data are available for nine sampling stations in the creek and estuary. The monitoring is conducted by the City of Los Angeles for the Ballona Creek Watershed Management Group.

Based on an evaluation of water quality data during the 2012-2017 period, bacteriological water quality during wet weather still needs to improve. For wet weather, in most cases, there were more exceedance days than allowed. Ballona Creek stations exceeded the allowable number of exceedance days about half the time. Water quality results showing exceedance days during wet weather are presented in Table 3.

Table 3 Ballona Creek Exceedances of the Allowable Exceedance Day Limitations during Wet Weather

Station ID	2012 – 2013				2013 – 2014				2014 – 2015				2015 – 2016				2016 – 2017			
	Sample Days	Sample Days with HFS	Exceedance Days*	Allowable Exceedance Days	Sample Days	Sample Days with HFS	Exceedance Days*	Allowable Exceedance Days	Sample Days	Sample Days with HFS	Exceedance Days*	Allowable Exceedance Days	Sample Days	Sample Days with HFS	Exceedance Days*	Allowable Exceedance Days	Sample Days	Sample Days with HFS	Exceedance Days*	Allowable Exceedance Days
BCB-1	7	1	1	2	3	0	1	2	6	0	0	2	2	2	0	2	6	2	2	2
BCB-2	7	1	5	2	3	0	3	2	8	0	4	2	0	0	0	2	0	0	0	2
BCB-3	7	1	5	2	3	0	1	2	8	0	5	2	3	2	0	2	6	2	4	2
BCB-4	7	1	6	2	3	0	2	2	8	0	7	2	3	2	1	2	5	2	3	2
BCB-5	7	1	2	2	3	0	2	2	8	0	3	2	3	2	0	2	6	2	4	2
BCB-6	7	1	6	3	3	0	3	3	8	0	8	3	3	2	1	3	6	2	4	3
BCB-7	7	1	6	3	3	0	3	3	8	0	5	3	3	2	1	3	6	2	4	3
BCB-8	7	1	5	3	3	0	2	3	8	0	5	3	3	2	1	3	6	2	4	3

* Days in which samples are above water quality objectives but where the High Flow Suspension is in effect are not counted as Exceedance Days.

In addition, the geometric mean standard was almost always exceeded at all stations, except BCB-1, where a less stringent standard applies. (BCB-1 is located in Reach 1, the uppermost reach of Ballona Creek; Reach 1 is only designated as REC-2.) Table 4 and Table 5 show geometric mean results for all stations except BCB-1.

Table 4 Ballona Creek Geometric Mean Exceedances (BCB-2 through BCB-5)

Station ID	2012 – 2013	2013 – 2014	2014 – 2015	2015 – 2016	2016 – 2017
	E. coli Exceedances / # of Calculated Geometric Means	E. coli Exceedances / # of Calculated Geometric Means	E. coli Exceedances / # of Calculated Geometric Means	E. coli Exceedances / # of Calculated Geometric Means	E. coli Exceedances / # of Calculated Geometric Means
BCB-2	52/52	51/52	2/2	0/0	0/0
BCB-3	52/52	52/52	53/53	52/52	8/8
BCB-4	52/52	52/52	53/53	52/52	8/8
BCB-5	52/52	49/52	53/53	52/52	8/8

Table 5 Ballona Creek Geometric Mean Exceedances (BCB-6 through BCB-8)

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	Enterococcus Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	Enterococcus Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	Enterococcus Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	Enterococcus Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	Enterococcus Exceedances / # of Calculated Geometric Means
BCB-6	52/52	52/52	52/52	52/52	52/52	52/52	49/52	36/36	50/52	53/53	0/0	38/53	52/52	0/0	8/8
BCB-7	52/52	52/52	52/52	52/52	52/52	52/52	52/52	36/36	52/52	53/53	0/0	53/53	52/52	0/0	8/8
BCB-8	23/52	49/52	52/52	18/52	42/52	52/52	20/52	29/36	29/52	19/53	0/0	14/53	22/52	0/0	0/8

d. Plans and Progress Towards Achieving TMDLs

The Ballona Creek Watershed Management Group consists of the cities of Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, and West Hollywood, along with the County of Los Angeles and Los Angeles County Flood Control District. The Ballona Creek Watershed Management Group developed a single EWMP to address three TMDLs for the Ballona Creek watershed: the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL, the Ballona Creek Estuary Toxic Pollutants TMDL, and the Ballona Creek Metals TMDL (Ballona Creek Watershed Management Group, 2016).

i. Projects identified in EWMPs

Based on the Reasonable Assurance Analysis (RAA) and modeling in the EWMP, zinc and *E. coli* were found to be the limiting pollutants for wet weather (EWMP, Table 6-5). The EWMP includes interim and final compliance targets based on the volume of water to be treated through different modeled BMPs to attain the TMDLs for the limiting pollutants. These BMPs are broken down into three different groups: Regional BMPs, Green Streets, and Low Impact Development (LID). The BMP capacities specified in the EWMP for each BMP group are summarized by jurisdiction, waterbody, and sub-watershed in Table 6.

Table 6 Modeled storage capacity of control measures in Ballona Creek EWMP

Jurisdiction	Waterbody	Required LID Capacity for Metals Compliance (acre-ft)	Required Green Streets Capacity for Metals Compliance (acre-ft)	Required Regional BMPs Capacity for Metals Compliance (acre-ft)	Total BMP Capacity for Metals Compliance (acre-ft)	Additional BMP Capacity for Bacteria Compliance (acre-ft)	Total Required BMP Capacity (acre-ft)
Beverly Hills	Ballona Creek	10.6	39.1	27.4	77.1	10.0	87.1
Culver City	Ballona Creek	14.6	14.1	30.9	59.6	8.3	67.9
Culver City	Centinela Creek	2.7	4.4	18.6	25.7	1.5	27.2
Culver City	Sepulveda Channel	0.3	1.1	2.5	3.9	0.0	3.9
Inglewood	Ballona Creek	0.8	0.0	9.2	10.0	0.0	10.0
Inglewood	Centinela Creek	7.2	7.3	31.4	45.9	0.0	45.9
Los Angeles	Ballona Creek	161.6	211.1	841.5	1214.2	150.3	1364.5
Los Angeles	Centinela Creek	6.2	16.5	31.6	54.3	2.9	57.2
Los Angeles	Sepulveda Channel	46.3	50.2	180.6	277.1	10.5	287.6
Santa Monica	Sepulveda Channel	1.0	1.7	15.8	18.5	0.0	18.5
County of Los Angeles	Ballona Creek	2.2	0.6	23.1	25.9	0.9	26.8
County of Los Angeles	Centinela Creek	6.5	6.7	21.5	34.7	2.1	36.8
West Hollywood	Ballona Creek	3.3	5.3	33.1	41.7	5.3	47.0
Total	**All**	**263.3**	**358.1**	**1267.2**	**1888.6**	**191.8**	**2080.4**

ii. Projects that have been completed

Since adoption of the TMDL, incorporation of the TMDL into the 2012 MS4 Permit, and approval of the Ballona Creek EWMP, responsible jurisdictions have mainly conducted planning, feasibility studies, conceptual designs, and pre-designs as they have pursued various funding sources. The structural control measures to attain TMDLs in the Ballona Creek Watershed that have been completed as of the 2018-19 Annual Report are:

- All responsible jurisdictions have adopted LID ordinances
- All responsible jurisdictions have adopted green street policies
- Construction of the Westside Water Quality Improvement Project and Mar Vista Recreation Center Stormwater Capture Project
- Construction of the University Park Neighborhood Rain Gardens Project
- Construction of the Westside Park Rainwater Irrigation Project

- Construction of the La Brea Infiltration Parkway Project
- Construction of rain gardens along Ballona Creek near Pearson Street, along Ballona Creek near Jackson Avenue, along Baldwin Avenue at Farragut Drive, along Ballona Creek near Overland Avenue, at the Culver City Maintenance Yard, at the Culver City Transfer Station, and on Regent Street at the Inglewood Fire Station
- Distribution and installation of rain barrels to residents
- Installation of catch basin retrofits

The 2018-19 Annual Report estimates the stormwater volume managed by structural control measures implemented in the Ballona Creek Watershed since October 1, 2011, which was the EWMP baseline. These values are listed in Table 7.

Table 7 Storage capacity of implemented structural control measures identified in Ballona Creek EWMP

Jurisdiction	Waterbody	LID (acre-ft)	Green Streets (acre-ft)	Regional BMPs (acre-ft)	Total Capacity (acre-ft)
Beverly Hills	Ballona Creek	0.32	1.04	0.00	1.36
Culver City	Ballona Creek	0.42	0.04	0.00	0.46
Culver City	Centinela Creek	0.33	0.00	0.00	0.33
Culver City	Sepulveda Channel	0.00	0.00	0.00	0.00
Inglewood	Ballona Creek	0.02	0.00	0.00	0.02
Inglewood	Centinela Creek	0.88	0.00	0.00	0.88
Los Angeles	Ballona Creek	16.95	0.19	0.00	17.14
Los Angeles	Centinela Creek	0.81	0.00	0.00	0.81
Los Angeles	Sepulveda Channel	3.05	0.00	50.00	53.05
Santa Monica	Sepulveda Channel	1.55	0.00	0.00	1.55
County of Los Angeles	Ballona Creek	0.38	0.00	0.00	0.38
County of Los Angeles	Centinela Creek	0.00	0.00	0.00	0.00
West Hollywood	Ballona Creek	5.20	0.00	0.00	5.20
Total	**All**	**29.91**	**1.27**	**50.00**	**81.18**

Structural control measures have been implemented to address a total of 81.18 acre-ft of the required 2080.4 acre-ft, or 4% of the required volume capture, to meet TMDL requirements.

iii. Projects that are nearly completed

Attachment 4 in the 2018-2019 Ballona Creek Watershed Annual Report lists projects that are in various planning stages. Several of those projects have already received funding and/or have begun construction or been completed. In addition, the Stormwater Investment Plan for the Central Santa Monica Bay Watershed Area includes five projects in the Ballona Creek Watershed that have approved Safe Clean Water Program funding. A summary of the projects that are likely to be completed in the near term based on the availability of funding from various sources are listed in Table 8.

Table 8 Projects that are nearly completed in the Ballona Creek Watershed

Jurisdiction	Project Name	BMP Capacity (acre-feet)	Total Cost	Funding Source(s)	Status
Culver City	Culver Boulevard Stormwater Retention Project	19.51	$16M	Prop 84 Grant ($3.3M), Prop 1 Grant ($4.4M), Measure CW – Culver City Stormwater Parcel Tax ($2.0M)	In Construction
City of Los Angeles	Vermont Avenue Green Street Phase II	1.86	$1.64M	Prop O and a Los Angeles County Metropolitan Transportation Authority grant	Bid and Award Phase
City of Los Angeles	Slauson Green Alley	0.153	$687,170	Supplemental Environmental Project	Completed May 2020
City of West Hollywood	Melrose Ave., Beverly Blvd., Robertson Blvd. Complete Street/Green Street	unknown	unknown	Los Angeles County Metropolitan Transportation Authority grant ($3.1M) and City of West Hollywood General Fund (approximately $790K)	unknown
City of West Hollywood	West Hollywood Park Modular Wetlands	unknown	unknown	Funded Debt Capital Project	In Construction
City of West Hollywood	Plummer Park Permeable Pavement Parking Lot	unknown	unknown	City Park Development Fund	unknown
County of Los Angeles	Ladera Park Stormwater Improvements Project	5.1	$7,130,600	Prop 1 Grant ($4.8M) Los Angeles County General Funds, Prop 84 ($3.7M), and Safe Clean Water Program ($2M)	In Construction
Beverly Hills	Burton Way Green Street and Water Efficient Landscape Project	7.32	$10,638,000	CIP funding, Safe Clean Water Program ($5M) and pursuing Prop 1 Grant ($3.2M)	Planning and Design
Culver City	Mesmer Low Flow Diversion	0	$1,800,000	Safe Clean Water Program ($950K)	Permitting
City of Los Angeles	MacArthur Lake Rehabilitation Project	13.1	$20,043,718	Safe Clean Water Program ($20,043,718)	Planning and Design
County of Los Angeles	Monteith Park and View Park Green Alley Stormwater Improvement Project	9.3	$9,100,000	County General Funds Prop 12 Grant, Safe Clean Water Program ($4,550,000)	Planning and Design
Total	--	56.34	--	--	--

It is anticipated that an additional 56.34 acre-feet will be addressed by structural control measures in the near term based on the current availability of funding. This brings the total BMP storage capacity implemented to 137.52 acre-feet of the required 2080.4 acre-ft, or 6.6% of the required storage capacity, to meet TMDL requirements.

In summary, permittees have implemented or nearly implemented 6.6% of the projects identified in the Ballona Creek Watershed EWMP to achieve the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL, the Ballona Creek Estuary Toxic Pollutants TMDL, and the Ballona Creek Metals TMDL.

iv. Time needed to complete remaining projects based on anticipated revenue

With 93.4% of the stormwater volume to be captured remaining and an estimated total capital cost of $2,892.11 M, the estimated cost of the remaining projects is $2,701.23 M. The estimated annual revenue from the Safe Clean Water Program for the Ballona Creek Watershed was estimated to be $23.75 M, and the matched funding was estimated to be $24.40 M, resulting in total annual funding of $48.15 M. The estimated cost of the remaining projects ($2,701.23 M) divided by total annual funding ($48.15 M) yields an estimate of 57 years to implement the Ballona Creek EWMP and achieve full compliance for the three Ballona Creek TMDLs. For cost estimates, funding, and estimated years to compliance by municipality, see Table A.1 in the Appendix.

e. Recommended TMDL Deadline Extension

Section E.1.c demonstrates that water quality still needs to improve significantly. Monitoring stations in the creek and estuary still exceed allowable exceedance days of single sample bacteria standards about half of the time and geometric means most of the time. It has been 22 years since Ballona Creek was placed on the CWA section 303(d) list for bacteria in 1998. It has been 13½ years since the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL became effective on April 27, 2007, and nearly 14½ years since the Board adopted the TMDL. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 14 years and three months, or July 15, 2021, to allow for an integrated water resources approach and to align the deadline with the Santa Monica Bay Beaches Bacteria TMDL. This schedule was deemed appropriate because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored and public health protected.

As described in Section E.1.d, since the TMDL became effective and was incorporated into the 2012 MS4 Permit, permittees have made progress in planning and design, but have implemented relatively few structural control measures to date. From a stormwater volume standpoint, permittees have implemented or nearly implemented 6.6% of the required BMP capacity outlined in their EWMP to achieve the TMDL. Permittees in the Ballona Creek Watershed have made a good faith effort towards the design and planning of control measures to comply with the TMDL, but they have not implemented a sufficient number of projects to achieve the TMDL. While the fact that only 6.6% of the required BMP capacity has been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective 13½ years ago.

Based on the original implementation schedule, the status of water quality, the pace of implementation to date, and the fiscal impacts of COVID-19, a 5-year TMDL deadline extension is recommended. Five years is an appropriate extension given the fact that the original schedule was over 14 years long, bringing the total implementation schedule to nearly 20 years to address a pollutant that threatens public health. An extension of five years also considers the fact that limited progress has been made to implement structural control measures in the watershed to date. Furthermore, a five-year extension of the TMDL implementation schedule through a Basin Plan amendment could be augmented in the future through a TSO, if appropriate. As discussed in Section C.2, permittees have the option to request a TSO for up to five years and an additional TSO for an additional five years if they need additional time to complete projects to achieve TMDL compliance. Given the fact that the Ballona Creek Watershed Group has spent significant time on the design and planning of projects to attain the TMDL, permittees can complete those projects in three to four years per project. If the projects are strategically spread out throughout the watershed and over time, it is possible to complete the remaining projects needed to achieve the TMDL within a five-year extension augmented with additional time, if needed, through a TSO. It is noted that the Ballona Creek Watershed Management Group will not be able to rely solely on the Safe Clean Water Program to fund these projects, but the extension allows time to pursue additional sources of funding to complete the projects. A five-year extension also accounts for the fiscal impacts due to COVID-19, which as discussed in Section D.7, are anticipated to last approximately three years. In conclusion, a five-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while allowing permittees time to accrue Safe Clean Water Program funding and pursue additional funding for implementation of projects.

2. Ballona Creek Estuary Toxic Pollutants TMDL

a. Regulatory History

The Ballona Creek Estuary Toxic Pollutants TMDL (Ballona Estuary Toxics TMDL) was adopted by the Los Angeles Water Board on July 7, 2005 (Board Resolution No. R05-008) to address metals and toxics pollutants in the sediment of Ballona Creek Estuary. The Ballona Estuary Toxics TMDL was subsequently approved by the State Water Board on October 20, 2005, by the Office of Administrative Law on December 15, 2005, and by US EPA on December 22, 2005. The Ballona Estuary Toxics TMDL became effective on January 11, 2006.

The Los Angeles Water Board revised the Ballona Estuary Toxics TMDL on December 5, 2013 (Resolution No. R13-010) in order to update certain technical elements. The implementation schedule was not revised. The revised Ballona Estuary Toxics TMDL was approved by the State Water Board on June 17, 2014 (Resolution No. 2014-0030), by the Office of Administrative Law on May 4, 2015, and US EPA on October 26, 2015.

b. TMDL Compliance Schedule

The TMDL required metals (cadmium, copper, lead, silver, zinc), chlordane, and DDT WLAs to be achieved in 15 years (January 11, 2021) and total PCBs WLAs to be achieved in 19 years (January 11, 2025). Interim WLAs were also included for percentage

reductions either by treating a percentage of the watershed or measured reductions in loading for individual metals or organic pollutants.

c. Water Quality Status

The Ballona Estuary Toxics TMDL includes targets and allocations for metals and toxics including cadmium, copper, lead, silver, zinc, chlordane, DDT, and PCBs in bed sediment, stormborne sediments, and fish tissue. Data from the 2012-13 to the 2016-17 rain years were used for this review.

Improvement in water quality is still needed. Bed sediment samples frequently exceeded numeric targets for cadmium, copper, lead, zinc, total chlordane, DDTs, and PCBs. More exceedances were observed at the monitoring location closer to the mouth of the estuary (Station BCE-PAC) (see Table 9). Stormborne sediment samples at receiving water stations consistently exceeded numeric targets for DDTs, PCBs, chlordane, cadmium, copper, lead, and zinc (see Table 10).

Table 9 Summary of Exceedances of Numeric Targets in Bed Sediment in Ballona Creek Estuary

Constituent	Station BCE_CUL			Station BCE_PAC		
	Samples	Exceeds	% Samples Exceeds	Samples	Exceeds	% Samples Exceeds
Cadmium	6	1	16.7%	7	3	42.9%
Copper	6	1	16.7%	7	5	71.4%
Lead	6	0	0.0%	7	2	28.6%
Silver	6	0	0.0%	7	0	0.0%
Total Chlordane	6	3	50.0%	7	5	71.4%
Total DDTs	6	2	33.3%	7	3	42.9%
Total PAHs	6	0	0.0%	7	0	0.0%
Total PCBs	6	3	50.0%	7	6	85.7%
Zinc	6	2	33.3%	7	5	71.4%

Table 10 Summary of Exceedances of Numeric Targets in Stormborne Sediment in Ballona Creek

Constituent	BC_02_ING			CC_CEN		
	Samples	Exceeds	% Samples Exceeds	Samples	Exceeds	% Samples Exceeds
Cadmium	8	2	25.0%	7	2	28.6%
Copper	8	2	25.0%	7	2	28.6%
Lead	8	2	25.0%	7	2	28.6%
Silver	8	1	12.5%	7	0	0.0%
Total Chlordane	11	8	72.7%	11	7	63.6%
Total DDTs	11	8	72.7%	11	8	72.7%
Total PAHs	11	3	27.3%	11	2	18.2%
Total PCBs	9	6	66.7%	9	6	66.7%
Zinc	8	2	25.0%	7	2	28.6%

One sampling event for fish tissue was evaluated. In this sampling event from 2017, the average fish tissue concentrations for DDTs, PCBs, and chlordane exceeded fish tissue targets.

d. Plans and Progress Towards Achieving TMDLs

See Section E.1.d for a discussion of the plans and progress towards implementing the Ballona Creek EWMP and achieving the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL, the Ballona Creek Estuary Toxic Pollutants TMDL, and the Ballona Creek Metals TMDL.

e. Recommended TMDL Deadline Extension

Section E.2.c demonstrates that water quality still needs improvement and that concentrations of toxic pollutants still frequently exceed water quality standards. It has been 22 years since Ballona Estuary was placed on the CWA section 303(d) list for toxic pollutants in 1998. It has been 14 years and 9 months since the Ballona Estuary Toxics TMDL became effective on January 11, 2006. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 15 years, or January 11, 2021, to allow for an integrated water resources approach. This schedule was deemed appropriate because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored, and beneficial uses protected.

As described in Section E.1.d, since the TMDL became effective and was incorporated into the MS4 Permit, permittees have made progress in planning and design, but have implemented relatively few structural control measures. While the fact that only 6.6% of the required BMP capacity has been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective nearly 15 years ago.

Based on the original implementation schedule, the status of water quality, the pace of implementation to date, and the fiscal impacts of COVID-19, a 5-year TMDL deadline extension is recommended. Note that only a one-year extension is recommended for the PCB WLAs because MS4 permittees already had an additional four years to achieve these PCB WLAs, until 2025. Five years is an appropriate extension given the fact that the original schedule was 15 years long to address toxic pollutants that impair beneficial uses such as aquatic life and wildlife, and the extension will bring the total implementation schedule to 20 years. As noted in Section E.1.e, an extension of five years also considers the fact that limited progress has been made to implement structural control measures in the watershed. As discussed in Section E.1.e, the proposed extension for this TMDL can also be augmented in the future through a TSO, if appropriate. Additionally, staff made similar considerations to those discussed in Section E.1.e, regarding the timing and strategic placement of individual projects in the watershed to achieve the TMDL and the importance of leveraging sources of funding beyond just the Safe Clean Water Program. A five-year extension also accounts for the fiscal impacts due to COVID-19, which as discussed in section D.7, are anticipated to last approximately three years. In conclusion, a five-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while allowing permittees time to accrue Safe Clean Water Program funding and pursue additional funding for implementation of projects.

3. Ballona Creek Metals TMDL

a. Regulatory History

The Ballona Creek Metals TMDL was adopted by the Los Angeles Water Board on July 7, 2005 (Resolution No, R05-007) to address metal pollutants in Ballona Creek. The Ballona Creek Metals TMDL was subsequently approved by the State Water Board on October 20, 2005, the Office of Administrative Law on December 9, 2005, and US EPA on December 22, 2005. The original Ballona Creek Metals TMDL became effective on January 11, 2006.

Due to legal challenges, the Los Angeles Water Board re-adopted the TMDL on September 6, 2007 (Resolution No. 2007-015). The re-adopted Ballona Creek Metals TMDL was subsequently approved by the State Water Board on June 17, 2008, the Office of Administrative Law on October 6, 2008, and US EPA on October 29, 2008. The readopted Ballona Creek Metals TMDL became effective on October 29, 2008.

The Los Angeles Water Board adopted a revision to the Ballona Creek Metals TMDL on December 5, 2013 (Resolution No. R13-010) in order to update certain technical elements. The implementation schedule was not revised. The revised Ballona Creek Metals TMDL was approved by the State Water Board on June 17, 2014 (Resolution No. 2014-0030), the Office of Administrative Law on May 4, 2015, and US EPA on October 26, 2015.

b. TMDL Compliance Schedule

The TMDL required metals WLAs to be achieved in 15 years (i.e., by January 11, 2021). Interim WLAs were also included for percentage reductions either by treating a percentage of the watershed or measured reductions in loading for individual metals.

c. Water Quality Status

The Ballona Creek Metals TMDL includes targets and allocations for copper, lead, and zinc in the water column in dry and wet weather. Data is available from the Ballona Creek Metals and Toxics TMDL Coordinated Monitoring Plan (CMP) and the Ballona Creek Coordinated Integrated Monitoring Program (CIMP).

Improvement in water quality is still needed. In the 2012-13 to 2016-17 rain years, for wet weather, most receiving water samples exceeded targets for both total and dissolved copper. There were also frequent exceedances of targets for total lead, and total and dissolved zinc (see Table 11).

Table 11 Summary of Exceedances at Receiving Water Stations during Wet Weather in Ballona Creek

Constituent	No. of Samples	Total		Dissolved	
		No. of Exceedances CTR Total	% Exceed	No. Exceedances CTR Dissolved	% Exceed
Copper	109	104	95.4%	84	77.1%
Lead	109	41	37.6%	0	0.0%
Selenium	80	0	0.0%	-	-
Zinc	109	102	93.6%	35	32.1%

d. Plans and Progress Towards Achieving TMDLs

See Section E.1.d for a discussion of the plans and progress towards implementing the Ballona Creek EWMP and achieving the Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL, the Ballona Creek Estuary Toxic Pollutants TMDL, and the Ballona Creek Metals TMDL.

e. Recommended TMDL Deadline Extension

Section E.3.c demonstrates that water quality still needs improvement and that concentrations of metals still frequently exceed water quality standards. It has been 22 years since Ballona Creek was placed on the CWA section 303(d) list for metals in 1998. It has been 14 years and 9 months since the original Ballona Creek Metals TMDL became effective on January 11, 2006. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 15 years, with a final deadline of January 11, 2021, to allow for an integrated water resources approach. This schedule was deemed appropriate because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored, and beneficial uses protected.

As described in Section E.1.d, since the TMDL became effective and was incorporated into the MS4 Permit, permittees have made progress in planning and design, but have implemented relatively few structural control measures. While the fact that only 6.6% of the required BMP capacity has been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective nearly 15 years ago.

Based on the original implementation schedule, the status of water quality, the pace of implementation to date, and the fiscal impacts of COVID-19, a 5-year TMDL deadline extension is recommended. Five years is an appropriate extension given the fact that the original schedule was 15 years long to address toxic pollutants that impair beneficial uses such as aquatic life and wildlife, and the extension will bring the total implementation schedule to 20 years. As noted in Section E.1.e, an extension of five years also considers the fact that limited progress has been made to implement structural control measures in the watershed. As discussed in Section E.1.e, the proposed extension for this TMDL can also be augmented in the future through a TSO, if appropriate. Additionally, staff made similar considerations to those discussed in Section E.1.e, regarding the timing and strategic placement of individual projects in the watershed to achieve the TMDL and the

importance of leveraging sources of funding beyond just the Safe Clean Water Program. A five-year extension also accounts for the fiscal impacts due to COVID-19, which as discussed in section D.7, are anticipated to last approximately three years. In conclusion, a five-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while allowing permittees time to accrue Safe Clean Water Program funding and pursue additional funding for implementation of projects.

4. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL

a. TMDL Regulatory History

The Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL was adopted by the Los Angeles Water Board on August 7, 2003 (Resolution 2003-012) to address exceedances of bacteria standards to protect human health. The TMDL was approved by the State Water Board on November 19, 2003, the Office of Administrative Law on January 30, 2004, and US EPA on March 8, 2004. The Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL became effective March 18, 2004.

This TMDL was revised by the Los Angeles Water Board on June 7, 2012 (Resolution No. R12-007) in order to update certain technical elements. The implementation schedule was not revised. The revised TMDL was approved by the State Water Board on May 19, 2013, the Office of Administrative Law on November 7, 2013, and US EPA on July 2, 2014.

b. TMDL schedule

The TMDL required wet-weather WLAs (expressed as exceedance days) and geometric mean WLAs to be achieved in about 17 years and 4 months (i.e., by July 15, 2021).

c. Water Quality Status

Bacteria water quality data are available for nine sampling stations in the Marina del Rey Harbor basins and beach areas. The monitoring is conducted by the City of Los Angeles for the Marina del Rey Watershed Management Program.

Bacterial indicator water quality still needs to improve. In wet weather, water quality stations in Marina del Rey Harbor usually failed to meet the final allowable number of exceedance days. Wet weather exceedance days at Marina del Rey sampling stations are shown in Table 12.

Table 12 Marina del Rey Annual Wet Weather Exceedance Days (November 1 – October 31)

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days
MdRH-1	41	27	17	26	18	17	54	36	17	39	19	17	54	26	17
MdRH-2	13	7	3	9	7	3	17	13	3	14	4	3	23	12	3
MdRH-3	8	5	3	4	2	3	9	6	3	8	6	3	12	7	3
MdRH-4 surface	9	5	3	5	1	3	9	5	3	8	2	3	9	3	3
MdRH-4 depth	9	1	3	5	1	3	9	5	3	8	1	3	9	1	3
MdRH-5	8	5	3	4	2	3	10	7	3	8	6	3	12	7	3
MdRH-6 surface	9	5	3	5	2	3	9	7	3	8	5	3	9	6	3
MdRH-6 depth	9	3	3	5	2	3	9	6	3	8	4	3	9	5	3
MdRH-7	9	4	3	5	4	3	9	7	3	8	6	3	9	5	3
MdRH-8 surface	9	2	3	5	1	3	9	7	3	8	2	3	9	2	3
MdRH-8 depth	9	1	3	5	1	3	9	6	3	8	1	3	9	2	3
MdRH-9 surface	9	3	1	5	1	1	9	5	1	8	2	1	9	3	1
MdRH-9 depth	9	1	1	5	1	1	9	4	1	8	1	1	9	3	1

In addition, the geometric mean standard was also often exceeded at Marina Beach (also known as Mothers' Beach) and in Basin E as shown in Table 13.

Table 13 Marina del Rey Annual Geometric Mean Exceedances by Constituent (November 1 – October 31)

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans
MdRH-1	8/52	1/52	24/52	21/52	3/52	38/52	20/52	13/52	33/52	0/53	0/53	22/53	5/52	10/52	13/52
MdRH-2	0/52	0/52	24/52	33/52	11/52	38/52	17/52	12/52	31/52	0/53	2/53	15/53	10/52	9/52	12/52
MdRH-3	27/52	11/52	37/52	29/52	10/52	52/52	28/52	25/52	37/52	22/53	1/53	32/53	18/52	14/52	18/52
MdRH-4 surface	0/52	0/52	7/52	0/52	4/52	6/52	0/52	8/52	15/52	0/53	2/53	0/53	0/52	3/52	6/52
MdRH-4 depth	0/52	0/52	3/52	0/52	0/52	8/52	0/52	6/52	9/52	0/53	0/53	0/53	0/52	1/52	1/52
MdRH-5	6/52	5/52	12/52	0/52	5/52	2/52	8/46	14/46	23/46	2/53	11/53	6/53	8/52	28/52	10/52
MdRH-6 surface	0/52	7/52	18/52	0/52	6/52	15/52	2/45	27/45	30/45	0/53	16/53	10/53	2/52	30/52	12/52
MdRH-6 depth	0/52	2/52	14/52	0/52	5/52	13/52	1/44	9/44	13/44	0/53	8/53	12/53	0/52	18/52	6/52
MdRH-7	6/52	9/52	12/52	0/52	6/52	8/52	7/47	18/47	20/47	6/53	16/53	13/53	6/52	36/52	13/52
MdRH-8 surface	0/52	1/52	3/52	0/52	0/52	0/52	0/52	7/52	11/52	0/53	0/53	0/53	0/52	5/52	5/52
MdRH-8 depth	0/52	0/52	2/52	0/52	0/52	0/52	0/52	5/52	3/52	0/53	0/53	0/53	0/52	2/52	1/52
MdRH-9 surface	0/52	0/52	4/52	0/52	0/52	0/52	0/52	5/52	0/52	0/53	0/53	0/53	0/52	2/52	4/52
MdRH-9 depth	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	1/52	3/52

d. Plans and Progress Towards Achieving TMDLs

The Marina del Rey Watershed Management Group consists of the cities of Culver City and Los Angeles, along with the County of Los Angeles and Los Angeles County Flood Control District. The Marina del Rey EWMP was developed to address both the Marina del Rey Harbor Bacteria and Toxics TMDLs.

i. Projects identified in EWMPs

The RAA in the Marina del Rey EWMP predicted that sediment-bound zinc requires the largest load reduction to attain the Toxics TMDL (95.5%) and that a smaller load reduction is necessary to attain the Bacteria TMDL (24%). Zinc is therefore the compliance driver, or limiting pollutant, in the EWMP. The RAA predicts the BMP capacities that will achieve the sediment-bound zinc WLAs through stormwater capture, filtration, and diversion, and associated total suspended solids (TSS) loading reductions (see Table 14 and Table 15).

Table 14 Modeled load reductions of control measures in the Marina del Rey EWMP (kg TSS)

Control Measure	Sub-watershed 1A (Back Basins)	Sub-watershed 1B (Front Basins)	Sub-watershed 3 (Boone Olive)	Sub-watershed 4 (Oxford Basin)	TMDL Total
Regional BMPs	0	0	122	14,687	14,810
Green Streets	2,680	6,327	713	14,089	23,810
LID BMPs	2,741	6,573	220	2,899	12,435
Diversion BMPs	1,553	3,730	87	985	6,356
Non-structural	504	1,217	86	2,385	4,193
Total BMP Load Reduction	7,479	17,848	1,228	35,046	61,604

Table 15 Modeled storage capacity of control measures in the Marina del Rey EWMP (acre-feet)

Control Measure	Sub-watershed 1A (Back Basins)	Sub-watershed 1B (Front Basins)	Sub-watershed 3 (Boone Olive)	Sub-watershed 4 (Oxford Basin)	TMDL Total
Regional BMPs	0	0	3.7	155.5	159.2
Green Streets	37.0	86.9	27.2	153.3	304.4
LID BMPs	31.9	79.4	7.6	31.9	150.7
Diversion BMPs	0	0	1.3	0	1.3
Non-structural	0	0	0	0	0
Total Captured Volume	68.9	166.3	39.8	340.7	615.7

There are other projects in the watershed, such as the Oxford Basin Multi-Use Enhancement Project, which were not included in the RAA, that will contribute to achieving TMDL compliance. Oxford Basin, which is located north of Basin E of the harbor, receives runoff from Sub-watershed 4, and the multi-use enhancement project is expected to achieve pollutant load reductions through enhanced water circulation, biofiltration, and sediment detention. The RAA does not include any predicted reductions from the Oxford Basin project because the project was initiated separately from EWMP

development. Therefore, TMDL compliance may be achieved without implementation of the full BMP storage capacity as modeled in the RAA.

Note that in certain sub-watersheds, a load reduction may be achieved without an equivalent volume reduction because the load reductions are intended to be achieved through stormwater filtration BMPs rather than stormwater infiltration or capture BMPs. However, for the purpose of this analysis, which is to compare the BMPs prescribed in the EWMP with the BMPs that have been implemented in order to determine the time needed to complete BMP implementation, this analysis compares the storage capacity prescribed with the storage capacity completed.

ii. Projects that have been completed

Since adoption of the TMDL, permittees have adopted LID ordinances, completed studies and planning, and implemented structural and non-structural projects. The following are the structural projects that have been completed to date based on the EWMP, the 2018-19 Annual Report, and a list submitted by the County of Los Angeles via email to the Los Angeles Water Board in March 2020.

- Five bio-retention filters in tree wells
- Marina Beach Water Quality Improvement Project – Phases I and II
- 293 trash screens in the City of Los Angeles area, four full capture devices in Culver City, and 40 full capture devices in Los Angeles County unincorporated area
- Marina del Rey Parking Lot 5 Project
- Marina del Rey Parking Lot 7 Project
- Oxford Basin Multi-Use Enhancement Project
- Marina del Rey Parking Lot 9 Project
- Marina del Rey Library Parking Project
- Oxford Basin, Washington Boulevard, and Boone Olive Low Flow Diversions

The 2018-19 Annual Report estimates the total volume of runoff retained from cumulative projects implemented since 2012 as 13.83 acre-feet, as shown in Table 16. The projects have resulted in a volume capture of 2.2% of the EWMP prescribed volume capture of 615.7 acre-feet.

Table 16 Cumulative summary of projects that retain runoff in Marina del Rey watershed since 2012

Sub-watershed	New Development/ Re- development	Other Projects	Area Addressed (acres)	Total Runoff Volume Retained Onsite (acre-feet)
Sub-watershed 1a	0	2	3.90	0
Sub-watershed 1b	1	1	7.76	10.66
Sub-watershed 3	13	0	0.34	0.24
Sub-watershed 4	63	0	3.56	2.93
Total	**77**	**3**	**15.56**	**13.83**

iii. Projects that are nearly completed

Section 2.6 of the 2018-2019 Annual Report lists multi-year projects that are in various planning stages. Table 17 includes those projects that are likely to be completed in the near term based on the availability of funding from various sources. For example, the Stormwater Investment Plan for the Central Santa Monica Bay Watershed Area includes funding for the Washington Boulevard Stormwater Diversion and Retention Project. Information in Table 17 was aggregated from the 2018-19 Annual Report and a list submitted by the County of Los Angeles via email to the Los Angeles Water Board in March 2020.

Table 17 Projects that are nearly completed in the Marina del Rey Watershed

Jurisdiction	Proposed Project	BMP Capacity (acre-feet)	Total Cost	Funding Source	Status
Culver City	Washington Boulevard Stormwater Diversion and Retention Project	2.96	$7.8 M	Safe Clean Water Program ($3.6 M), Los Angeles County Open Space and Park Grant ($7.7K), Costco ($1.3M)	Final Design
County of Los Angeles	Water Quality Catch Basin Project (filtration)	--	$2 M	County funds	Draft Concept Report
County of Los Angeles	Biofiltration in Parking Lot 45	--	$1.4 M	County funds	Construction

It is anticipated that an additional 2.96 acre-feet will be captured by structural control measures in the near term based on the current availability of funding. This brings the total BMP capacity implemented to 16.8 acre-feet of the prescribed 615.7 acre-ft, or 2.7% of the prescribed storage capacity, to meet TMDL requirements. Again, the loading reductions achieved by all the projects implemented to date and in the near-term, such as biofiltration projects, are not captured by this volume-based analysis.

In summary, permittees have implemented or nearly implemented 2.7% of the projects identified in the Marina del Rey EWMP to achieve the Marina del Rey Harbor Bacteria and Toxics TMDLs.

iv. Time needed to complete remaining projects based on anticipated revenue

With 97.3% of the stormwater volume to be captured remaining and an estimated total capital cost of $368.12 M, the estimated cost of remaining projects is $358.09 M. The annual revenue from the Safe Clean Water Program for Marina del Rey was estimated to be $0.3 M, and the matched funding was estimated to be $0.3 M, resulting in total annual funding of $0.6 M. The estimated cost of the remaining projects ($358.09 M) divided by total annual funding ($0.6 M) yields an estimate of 597 years to achieve full compliance for the Marina del Rey TMDLs. For cost estimates, funding, and estimated years to compliance by municipality, see Table A.2 in the Appendix.

e. Recommended TMDL Deadline Extension

Section E.4.c demonstrates that water quality usually fails to meet the allowable number of exceedance days of single sample bacteria standards and often exceeds geometric mean standards. It has been 22 years since Marina del Rey Harbor, including Mothers' Beach, was placed on the CWA section 303(d) list for bacteria in 1998. It has been 16½ years since the Marina del Rey Harbor Bacteria TMDL became effective on March 18, 2004. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 10 years, or up to 18 years if an integrated water resources approach was implemented. When the TMDL was reconsidered in 2012, the schedule was set at July 15, 2021 to reflect the permittees' pursuit of an integrated water resources approach and to align the deadline with the Santa Monica Bay Beaches Bacteria TMDL. This schedule was deemed appropriate because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored, and public health protected.

As described in Section E.4.d, since the TMDL became effective and was incorporated into the MS4 Permit, permittees have made progress in planning and design, but most Permittees have implemented relatively few structural control measures. From a stormwater volume standpoint, permittees have implemented or nearly implemented 2.7% of the required BMP capacity outlined in their EWMP to achieve the TMDL. Permittees in the Marina del Rey Watershed have made a good faith effort towards the design and planning of control measures to comply with the TMDL, but they have not implemented a sufficient number of projects to achieve the TMDL. While the fact that only 2.7% of the required BMP capacity has been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective 16½ years ago.

Other projects that were not included in the EWMP, such as the Oxford Basin Multi-Use Enhancement Project, will contribute to TMDL compliance, but these contributions have not yet been quantified. Thus, TMDL compliance may be achieved without implementation of the full BMP storage capacity identified in the EWMP. Staff also considered the fact that the Marina del Rey Watershed is only 2.9 square miles. It would be inconsistent with US EPA guidance that implementation plans be sufficient to achieve WLAs in a reasonable period of time to allow for a lengthy additional implementation schedule to address the runoff from a 2.9-square mile area, especially since permittees have already had 16½ years to do so.

Based on TMDL- and watershed-specific factors, including the original implementation schedule, the status of water quality, the pace of implementation to date, the unquantified benefits of the Oxford Basin project, and the small size of the watershed, an extension is not recommended. However, based on the fiscal impacts of COVID-19, a 3-year TMDL deadline extension is recommended. As discussed in Section C.2, permittees have the option to request a TSO for up to five years and an additional TSO for an additional five years if they need additional time to complete projects to achieve TMDL compliance. Given the fact that the Marina del Rey Watershed Group has spent significant time on the design and planning of projects to attain the TMDL, permittees can move forward with the construction of those projects in three to four years per project. It is possible to complete the remaining projects needed to achieve the TMDL within a three-year extension plus additional time, if needed, through a TSO. In conclusion, a three-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while accounting for the recent fiscal impacts of COVID-19.

5. Marina del Rey Toxic Pollutants TMDL

a. Regulatory History

The Marina del Rey Harbor Toxic Pollutants TMDL was adopted by the Los Angeles Water Board on October 6, 2005 (Resolution No. 2005-012) to address metals and organic pollutants in sediment in the back basins of Marina del Rey Harbor. The Marina del Rey Harbor Toxic Pollutants TMDL was subsequently approved by the State Water Board on January 13, 2006, the Office of Administrative Law on March 13, 2006, and US EPA on March 16, 2006. The TMDL became effective on March 22, 2006.

The Los Angeles Water Board adopted a revision to the Marina del Rey Harbor Toxic Pollutants TMDL on February 6, 2014 (Resolution No. R14-004). The TMDL revision included an increase in the geographic scope of the TMDL to address the entire harbor, instead of just the Back Basins D, E and F; the addition of a TMDL to address the impairment for DDTs in the sediment; and the addition of a TMDL to address the impairment for dissolved copper in the water column. The implementation schedule was revised to include a deadline for the front basins of March 22, 2021 and to add an additional two years to the deadline for the Back Basins, bringing the final compliance date to March 22, 2018. The revised TMDL was approved by the State Water Board on September 9, 2014 (Resolution No. 2014-0049), the Office of Administrative Law on May 4, 2015, and US EPA on October 16, 2015. The revised TMDL became effective on October 16, 2015.

b. TMDL Compliance Schedule

The revised Marina del Rey Harbor Toxic Pollutants TMDL required metals and organics WLAs to be achieved in the Back Basins D, E and F in 12 years (i.e., by March 22, 2018), and in the Front Basins A, B, C, G and H in 15 years (i.e., by March 22, 2021). Interim WLAs were also included for percentage reductions.

c. Water Quality Status

The TMDL sets targets and allocations for copper, lead, zinc, chlordane, DDT, and PCBs in sediment, copper and PCBs in the water column, and PCBs in fish tissue. The TMDL provides an alternative compliance pathway for bed sediment and fish tissue by meeting

the Sediment Quality Objectives (SQOs) for bed sediment via an integrated assessment including sediment chemistry, toxicity, and benthic community.

Improvement in water quality is still needed. In the 2012-13 to 2016-17 rain years, in sediment, copper, lead, zinc, and PCBs exceeded targets 100% of the time. Chlordane exceeded 17% of the time (see Table 18). DDT was not analyzed.

Table 18 Summary of Exceedances for Metals, Chlordane, and Total PCBs in Sediment Samples in Marina del Rey Harbor

Constituent	# of Samples	# of Exceedances	Frequency of Exceedances (%)
Total Copper	53	53	100%
Total Lead	53	53	100%
Total Zinc	53	53	100%
Chlordane	53	914	17%
Total PCBs	53	53	100%

Sediment quality was also assessed compared to SQOs in 2018-19. Stations in Basins B, D, and E were assessed as “likely impacted” and did not meet the standard, while the two stations assessed in the main channel were assessed “likely unimpacted,” meeting the standard (Marina del Rey Enhanced Watershed Management Group, 2019).

d. Plans and Progress Towards Achieving TMDLs

See Section E.4.d for a discussion of the plans and progress towards implementing the Marina del Rey EWMP and achieving the Bacteria and Toxics TMDLs.

e. Recommended TMDL Deadline Extension

Section E.5.c demonstrates that water quality still needs improvement and that concentrations of toxic pollutants in Marina del Rey Harbor still frequently exceed water quality standards. It has been 22 years since Marina del Rey Harbor was placed on the CWA section 303(d) list for toxic pollutants in 1998. It has been 14½ years since the Marina del Rey Harbor Toxic Pollutants TMDL became effective on March 22, 2006 and five years since the revised TMDL became effective on October 16, 2015. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 15 years for the Back Basins to achieve the TMDL. When the TMDL was reconsidered in 2014, the implementation schedule was revised to add an additional two years to the deadline for the Back Basins and to include a deadline for the front basins of March 22, 2021 with the input of permittees and other stakeholders. This schedule was deemed appropriate because it allowed time for permittees to obtain funding and sequence projects to ensure that water quality was restored and beneficial uses protected.

As described in Section E.4.d, since the TMDL became effective and was incorporated into the MS4 Permit, permittees have made progress in planning and design; but from a stormwater volume standpoint, permittees have only implemented or nearly implemented 2.7% of the required BMP capacity outlined in their EWMP to achieve the TMDL. While the fact that only 2.7% of the required BMP capacity has been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective 14½ years ago. As discussed

in Section E.4.d, other projects that were not included in the EWMP, such as the Oxford Basin Multi-Use Enhancement Project, will contribute to TMDL compliance; thus, TMDL compliance may be achieved without implementation of the full BMP storage capacity required by the EWMP. As staff did for the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL in Section E.4.e, staff also considered that the Marina del Rey Watershed is only 2.9 square miles. As noted previously, it would be inconsistent with US EPA to allow for a lengthy additional implementation schedule to address the runoff from a 2.9-square mile area, especially since permittees have already had 14½ years to do so.

Based on TMDL- and watershed-specific factors, including the original implementation schedule, the status of water quality, the pace of implementation to date, the unquantified benefits of the Oxford Basin project, and the small size of the watershed, an extension is not recommended. However, based on the fiscal impacts of COVID-19, a 3-year TMDL deadline extension is recommended for the Front Basins. It is recommended that the deadline for the Back Basins be extended as well, such that the deadline for the entire Harbor would be March 22, 2024.

Staff also made similar considerations to those discussed in Section E.4.e, regarding the timing and strategic placement of individual projects in the watershed to achieve the TMDL and the importance of leveraging sources of funding beyond just the Safe Clean Water Program. As also discussed in Section E.4.e, the proposed extension for this TMDL can also be augmented in the future through a TSO, if appropriate. In conclusion, a three-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while accounting for the recent fiscal impacts of COVID-19.

6. Malibu Creek and Lagoon Bacteria TMDL

a. TMDL Regulatory History

The Malibu Creek and Lagoon Bacteria TMDL was adopted by the Los Angeles Water Board on December 13, 2004 (Resolution No. 2004-019R) to address exceedances of bacteria standards to protect human health. The TMDL was approved by the State Water Board on September 22, 2005, the Office of Administrative Law on December 1, 2005, and US EPA on January 10, 2006. The Malibu Creek and Lagoon Bacteria TMDL became effective on January 24, 2006.

The TMDL was revised by the Los Angeles Water Board on June 7, 2012 (Resolution No. R12-009) in order to update certain technical elements. The implementation schedule was not revised. The revised TMDL was approved by the State Water Board on March 19, 2013, the Office of Administrative Law on November 8, 2013, and US EPA on July 2, 2014.

b. TMDL Compliance Schedule

The TMDL required wet-weather WLAs (expressed as exceedance days) and geometric mean WLAs to be achieved in about 15½ years (i.e., by July 15, 2021).

c. Water Quality Status

Data from the 2009-2010 to the 2016-2017 rain years were used for analysis of Ventura County stations and from 2012-2013 to 2016-2017 for analysis of Los Angeles County

stations, including Malibu Lagoon. Bacteria water quality data are available for 9 to 14 stations (depending on year) in Malibu Creek in Los Angeles County, 3 to 6 stations (depending on year) in Malibu Creek in Ventura County, and in Malibu Lagoon.

Bacterial indicator water quality still needs to improve. In wet weather, sampling locations are still exceeding the allowable number of exceedance days throughout the Malibu Creek Watershed. For Malibu Lagoon, in wet weather, the number of exceedance days almost always exceeded the allowable number of exceedance days (see Table 20). For the Los Angeles County creek stations, the frequency of exceedances in wet weather varied, but in the most recent year, 10 of 11 stations exceeded the allowable number of exceedance days (see Table 21).

Table 19 Summary of Exceedances of Bacteria Single Sample Receiving Water Limitations in Malibu Lagoon in wet weather

Storm Year	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeding Allowable Exceedance Days
2012-13	5	4	3	1
2013-14	2	1	3	0
2014-15	6	6	3	3
2015-16	4	3	3	0
2016-17	7	4	3	1

Table 20 Summary of E. coli Single Sample Exceedances in Malibu Creek within Los Angeles County during Wet Weather

Station ID	2012 – 2013				2013 – 2014				2014 – 2015				2015 – 2016				2016 – 2017			
	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days
MCW-2	5	2	3	0	2	0	2	0	6	4	2	2	4	2	2	0	6	3	2	1
MCW-3 (old)	5	3	3	0	2	0	2	0	5	4	2	2	4	2	2	0	-	-	-	-
MCW-3 (new)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	3	2	1
MCW-4	3	2	3	0	2	1	2	0	4	3	2	1	1	0	2	0	4	4	2	2
MCW-5	5	3	3	0	1	1	2	0	5	4	2	2	2	3	2	1	4	4	2	2
MCW-6	-	-	3	-	-	-	2	-	2	2	2	0	2	2	2	0	4	4	2	2
MCW-7	5	5	3	2	2	1	2	0	6	4	2	2	4	3	2	1	7	4	2	2
MCW-10 (old)	5	3	3	0	2	0	2	0	6	3	2	1	4	2	2	0	-	-	-	-
MCW-10 (new)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	2	3
MCW-11	5	4	3	1	2	1	2	0	6	3	2	1	4	1	2	0	5	3	2	1
MCW-13 (old)	5	5	3	2	2	2	2	0	6	6	2	4	4	4	2	2	-	-	-	-
MCW-13 (new)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	2	3
MCW-16	2	0	3	0	1	0	2	0	4	0	2	0	2	0	2	0	4	1	2	0
S02	-	-	3	-	-	-	2	-	-	-	2	-	3	3	2	1	3	3	2	1

Ventura County stations also had frequent exceedances of the bacterial targets. In wet weather, stations exceeded the allowable number of exceedance days about a quarter of the time (see Table 22 and Table 23).

Table 21 Summary of Bacteria Single Sample Exceedances in Malibu Creek within Ventura County – Wet Weather (2009-2013)

Station ID	2009-2010				2010-2011				2011-2012				2012-2013			
	Sample Days	Exceedance Days	Allowable Exceedance Days*	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days
MCW-8b	3	0	3	0	4	2	3	0	3	1	3	0	-	-	3	-
MCW-12	6	4	3	1	8	5	3	2	5	4	3	1	4	3	3	0
MCW-14b	6	4	3	1	8	7	3	4	5	5	3	2	4	4	3	1
MCW-15b	6	3	3	0	-	-	3	-	-	-	3	-	-	-	3	-
MCW-15c	-	-	3	-	8	5	3	2	5	2	3	0	4	1	3	0
MCW-17	3	0	3	0	6	2	3	0	-	-	3	-	-	-	0	-
MCW-18	-	-	3	-	1	1	3	0	-	-	3	-	-	-	3	-

* Allowable exceedance days for weekly sampling per the original TMDL were applied, since these are the receiving water limitations that are in the Ventura County MS4 Permit.

Table 22 Summary of Bacteria Single Sample Exceedances in Malibu Creek within Ventura County – Wet Weather (2013-2017)

Station ID	2013-2014				2014-2015				2015-2016				2016-2017			
	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Exceeds Allowable Exceedance Days
MCW-8b	-	-	3	-	-	-	3	-	-	-	3	-	4	0	3	0
MCW-12	1	1	3	0	7	5	3	2	4	4	3	1	5	3	3	0
MCW-14b	1	1	3	0	7	5	3	2	4	3	3	0	5	4	3	1
MCW-15b	-	-	3	-	-	-	3	-	-	-	3	-	-	-	3	-
MCW-15c	1	0	3	0	7	2	3	0	4	1	3	0	8	5	3	2
MCW-17	-	-	3	-	1	0	3	0	-	-	3	-	4	1	3	0
MCW-18	-	-	3	-	2	2	3	0	-	-	3	-	-	-	3	-

In addition, in both Los Angeles and Ventura Counties, while some stations typically met the geometric mean target, many stations exceeded the target most of the time (see Table 24, Table 25, and Table 26).

Table 23 Summary of E. coli Geometric Mean Exceedances in Malibu within Los Angeles County

Station ID	*E. coli* Exceedances / # of Calculated Geometric Means				
	2012-13	2013-14	2014-15	2015-16	2016-17
MCW-2	1/25	0/23	1/17	0/17	6/25
MCW-3 (old)	5/52	0/52	0/52	0/35	-
MCW-3 (new)	-	-	-	0/11	8/34
MCW-4	2/18	3/5	4/15	2/7	8/19
MCW-5	1/25	0/7	0/18	0/18	9/22
MCW-6	-	-	-	-	5/6
MCW-7	24/52	4/52	12/52	10/53	9/34
MCW-10 (old)	41/52	43/52	48/52	24/35	-
MCW-10 (new)	-	-	-	9/11	26/34
MCW-11	22/50	5/49	0/52	0/37	8/28
MCW-13 (old)	50/52	52/52	52/52	35/35	-
MCW-13 (new)	-	-	-	2/11	33/34
MCW-16	0/23	0/6	0/15	0/4	4/20

Table 24 Summary of Exceedances of Bacteria Geometric Mean Receiving Water Limitations in Malibu Lagoon

Storm Year	Fecal Coliform Exceedances / # of Calculated Geometric Means	Total Coliform Exceedances / # of Calculated Geometric Means	*Enterococcus* Exceedances / # of Calculated Geometric Means
2012-13	7/24	11/52	10/52
2013-14	0/21	4/52	17/52
2014-15	20/23	28/52	19/52
2015-16	12/27	23/38	15/38
2016-17	5/28	9/34	9/34

Table 25 Summary of Bacteria Geometric Mean Exceedances in Malibu Creek and its Tributaries within Ventura County

Year	MCW-8b		MCW-12		MCW-14b		MCW-15b		MCW-15C		MCW-17	
	E. coli Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	*E. coli* Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	*E. coli* Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	*E. coli* Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	*E. coli* Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means	*E. coli* Exceedances / # of Calculated Geometric Means	Fecal Coliform Exceedances / # of Calculated Geometric Means
2009-10	11/22	0/12	17/53	0/43	53/53	0/53	37/41	0/41	5/5	0/5	3/18	0/15
2010-11	10/21	0/13	38/52	0/52	52/52	0/52	-	-	34/52	0/46	2/27	0/11
2011-12	2/16	0/10	22/52	0/47	51/52	0/52	-	-	10/52	0/37	-	-
2012-13	-	-	5/38	0/21	44/52	0/52	-	-	15/52	0/28	-	-
2013-14	-	-	12/33	0/13	43/52	0/2	-	-	24/52	0/24	-	-
2014-15	-	-	14/22	-	32/52	-	-	-	28/52	0/2	-	-
2015-16	-	-	7/10	-	29/53	-	-	-	28/53	-	-	-
2016-17	-		6/22	-	19/34	-	-	-	12/34	-	3/16	-

d. Plans and Progress Towards Achieving TMDLs

i. Projects identified in EWMPs

The Malibu Creek Watershed is being addressed by three separate watershed management groups: the Malibu Creek Enhanced Watershed Management Program (MC EWMP), the North Santa Monica Bay Coastal Watersheds EWMP (NSMB EWMP), and Ventura County. Staff assessed all three watershed management groups for the Malibu Creek and Lagoon Bacteria TMDL.

MC EWMP

The MC EWMP was approved by the Los Angeles Water Board on April 27, 2016 to address the Bacteria and Nutrients TMDLs. The MC EWMP's RAA determined that E. coli and total phosphorus are the limiting pollutants for wet weather. The RAA and the MC EWMP specified the volume of stormwater to be managed and the associated capacities of control measures to be implemented (LID, green streets, and regional BMPs) to achieve the TMDLs (see Table 27).

Table 26 Modeled storage capacity of control measures in the MC EWMP

Control Measure	Structural BMP Capacity Nutrient TMDL (acre-feet)	Structural BMP Capacity Bacteria TMDL (acre-feet)
Regional BMPs	2.2	36.3
Green Streets	7.9	49.3
LID BMPs	1.9	10.1
Total Captured Volume	12	95.7

The MC EWMP identified the following specific Regional projects that would achieve the prescribed BMP capacities:

- TC-02: Los Angeles County Bioretention
- LVC-14: Los Angeles County Infiltration Chamber/Stormwater Harvest and Use
- TC-37: Westlake Village Infiltration Basin
- MEC-12: Agoura Hills Streamflow Capture Facility/Infiltration Chamber/Stormwater Harvest and Use
- TC-35: Westlake Village Stormwater Harvest and Use
- LC-02: Agoura Hills Infiltration Chambers/Stormwater Harvest and Use
- MEC-09: Agoura Hills Stormwater Harvest and Use
- TC-29: Westlake Village Infiltration Chambers

The MC EWMP specified LID and green streets over approximately 77% of the developed land in the watershed, or approximately 7,394 acres, to attain the remaining prescribed BMP capacities.

NSMB EWMP

The NSMB EWMP was approved by the Los Angeles Water Board on April 19, 2016. The NSMB EWMP Group is responsible for the portion of the Malibu Creek Watershed within the City of Malibu. This area is approximately 618 acres, or 0.87 percent of the entire 70,651-acre Malibu Creek Watershed. Approximately 306 acres of the 618-acre area are tributary to Malibu Legacy Park, an existing regional BMP capable of capturing and retaining the 85th percentile, 24-hour storm for most of the 306-acre Civic Center drainage area, as well as dry weather flows from two drains tributary to the project. The

remaining area is low density development from which runoff flows through vegetated areas before discharging to the creek. Therefore, the RAA shows that no additional structural control measures are required to achieve the TMDLs, since the existing load is less than the allowable load, and no load reduction is required.

Ventura County Implementation Plan

The Ventura County MS4 Permit does not include provisions for development and implementation of watershed management programs and therefore no watershed management programs within Malibu Creek Watershed for Ventura County have been submitted to the Los Angeles Water Board. However, the Malibu Creek Bacteria TMDL required the submittal of an implementation plan.

On February 27, 2007, the Los Angeles Water Board received an Integrated Total Maximum Daily Load Implementation Plan (TMDL IP) for the Malibu Creek Watershed developed by Los Angeles and Ventura Counties, Caltrans, and the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Thousand Oaks, and Westlake Village. The TMDL IP gives general descriptions of the proposed non-structural BMPs for all of Malibu Creek Watershed to be completed by 2021. The plan also identifies 13 potential sites for regional BMPs; however, only three are in the portion of the Malibu Creek Watershed within Ventura County: two in Ventura County unincorporated areas and one in Thousand Oaks.

- In Thousand Oaks: infiltration basin in Upper Lindero Creek at the County line to treat stormwater from 1,929 acres.
- In Ventura County unincorporated area: subsurface flow wetland at Oak Canyon Community Park to treat stormwater from 541 acres.
- In Ventura County unincorporated area: Infiltration Basin at Medea Creek Park to treat stormwater from 1,759 acres.

On May 13, 2013, the County of Ventura and the Ventura County Watershed Protection District submitted an addendum to the 2007 TMDL IP, which prioritized the Hidden Valley, Potrero, Upper Lindero, and Upper Medea sub-watersheds for BMP implementation. The addendum described several non-structural BMPs throughout the County unincorporated area and the following structural BMPs the Upper Lindero and Upper Medea sub-watersheds for compliance with the wet-weather TMDL:

- Infiltration gardens and green streets
- Bioswales at Brookside and Red Oak Elementary Schools and Medea Creek Middle School

In addition, Ventura County created a Ventura Countywide Municipal Stormwater Resource Plan on September 20, 2016 for the Ventura Countywide Stormwater Management Program. The plan contained a summary of potential multi-benefit stormwater projects that have been identified throughout Ventura County that are in various planning level stages:

- Modeled: Lindero Creek diversion and subsurface storage tank at North Ranch Playfield Park, owned by Conejo Recreation and Park District, which was not identified in the 2007 TMDL IP or addendum

- Pre-concept: Distributed BMPs
- Funded: BMP 5 - Oak Park, funded by Proposition 84, now contains parkway biofilters and ten modular wetland systems

ii. Projects that have been completed or are nearly completed

Since the approval of the MC EWMP, Los Angeles County, Ventura County, and cities have implemented several minimum control measures, LIDs, and nonstructural BMPs, such as public outreach programs, water conservation ordinances, city car wash ordinances, garden workshops, street sweeping, etc. Annual reports from 2015-2019 were reviewed for project status updates. Many of the planning efforts were delayed due to the Woolsey Fire in November 2018. Table 28 describes the status of the major structural BMPs implemented, any new structural projects described in the annual reports, and the associated costs where available.

Table 27 Projects completed or near completion in the MC EWMP and Ventura County

Project	Jurisdiction	Status	Total Cost	Funded
Las Virgenes Creek Restoration Project Phase II	Calabasas	Completed April 2019	No information provided	Yes
City-wide Green Streets -- Malibu Hills Road	Calabasas	Expected Late 2019/Early 2020	No information provided	No - Applied for 2 Grants
City-wide Green Streets - Las Virgenes Road and Malibu Hills Road	Calabasas	Designed	No information provided	No - Applied for 2 Grants
Malibu Hills Stormwater Enhancement Project (Green Street)	Calabasas	Completed December 2017	No information provided	Yes
LVC-14 - Gates Canyon	LA County/ Calabasas	Expected July 2020	$8.9 M	$3.3 Million - Prop 1
TC-02 - Mulholland Hwy Super Green Streets	LA County	In Design	$1,992,000	No
Green Streets	LA County	In Design	TBD	No
Green Street - Mureau Rd. at Mountain View Dr.	LA County	Completed October 2018	No information provided	Yes
TC-37 - Ridgeford Infiltration Basin	Westlake Village	In Design	$2,286,810	No - Will apply Measure W for feasibility study
Lindero Linear Bioswale Project	Westlake Village	Completed September 2019	No information provided	Yes
TC-29 - Infiltration Chamber at Foxfield Park	Westlake Village	TBD	$1,216,370	No
TC-35 - Infiltration Basin at Three Springs Park	Westlake Village	TBD	$2,379,786	No
Lot 80 – Infiltration Ponds	Westlake Village	TBD	TBD	No
Agoura Road Sidewalk Project (Green Street)	Westlake Village	Completed October 2016	No information provided	Yes
County Yard Treatment Facility	Agoura Hills/LA County	In Design	$22.5 M	$3.5 M - Prop 1 IRWM Grant
LC-02 - Reyes Adobe Green Street Project	Agoura Hills	Concept	$5.5 M	No
MEC-09 - Infiltration chamber at Chumash Park	Agoura Hills	Designed	$1,961,478	No
MEC-12 - Streamflow Capture Facility-	Agoura Hills	In Design	$4,448,577	No
BMP 5 - Oak Park Green Streets Retrofit	Ventura County	Phase I: October 2017 Phase II: Spring 2019	$2,055,192	Prop 84 - $1.75 Million

The 2018-19 MC EWMP Annual Report estimates the total BMP retention capacity from cumulative projects implemented since 2012 (see Table 29). The projects have resulted in a volume capture of 2.6% of the EWMP prescribed volume capture of 95.7 acre-feet.

Table 28 Cumulative Summary of Projects in the MC EWMP that Retain Runoff since 2012

Sub-watershed	New Development/ Re- development	Other Projects	Area Addressed (acres)	Total BMP Retention Capacity (acre-feet)
Lindero Creek	4	0	2.27	0.06
Malibu Creek	11	0	4,047	0
Medea Creek	2	0	1.73	0.02
Stokes and Las Virgenes Creeks	1	2	10.1	2.34
Triunfo Canyon Creek	6	0	2.93	0.11
Total	**24**	**2**	**4,064**	**2.53**

The volume capture from Ventura County projects, including the Ventura County Oak Park Green Streets Retrofit project, were not quantified.

In summary, permittees in Los Angeles County have implemented or nearly implemented 2.6% of the projects identified in the MC EWMP to achieve the TMDL and permittees in Ventura County have implemented one of three projects identified in their implementation plan.

iii. Time needed to complete remaining projects based on anticipated revenue

This analysis is based on projects remaining to be completed in the MC EWMP, but the results are applied to Ventura County as well. There aren't similar data regarding volume capture and annual revenue for Ventura County to conduct a Ventura County-specific analysis. And, as stated before, the NSMB EWMP RAA shows that no additional control measures are required to achieve the TMDLs.

With 97.4% of the stormwater volume to be captured in the MC EWMP area remaining and an estimated total capital cost of $201.54 M, the estimated cost of the remaining projects is $196.30 M.

The annual revenue from the Safe Clean Water Program for the portion of Malibu Creek in Los Angeles County was estimated to be $3.12 M, and the matched funding was estimated to be $3.22 M, resulting in total annual funding of $6.34 M. The estimated cost of the remaining projects ($196.30 M) divided by the total annual funding ($6.34 M) yields an estimate of 31 years to achieve full compliance for both the Malibu Creek Bacteria and Nutrient TMDLs. For estimated costs, funding, and estimated years to compliance by municipality, see Table A.3 in the Appendix.

e. Recommended TMDL Deadline Extension

Section E.6.c demonstrates that water quality still needs improvement and that concentrations of bacteria in wet weather in the Malibu Creek Watershed still frequently exceed water quality standards. It has been 22 years since Malibu Creek was placed on the CWA section 303(d) list for bacteria in 1998. It has been nearly 15 years since the Malibu Creek Bacteria TMDL became effective on January 24, 2006. The original TMDL implementation schedule, in consideration of the input from permittees and other

stakeholders, was set at 15½ years, or July 15, 2021, to allow for an integrated water resources approach and to align the deadline with the Santa Monica Bay Beaches Bacteria TMDL. This schedule was deemed reasonable because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored, and public health protected in a timely manner.

As described in Section E.6.d, the NSMB EWMP RAA shows that no additional control measures are required to achieve the TMDLs and thus no additional time is necessary in this portion of the watershed. In the MC EWMP and Ventura County, jurisdictions have made efforts to implement non-structural BMPs such as public outreach and city ordinances to reduce bacteria loads. Jurisdictions in the MC EWMP and Ventura County have also adopted LID ordinances that require post-construction BMPs and have implemented six structural BMPs, and almost completed another one. As described above, from a stormwater volume standpoint, permittees have implemented or nearly implemented 2.6% of the required BMP capacity outlined in the MC EWMP and permittees in Ventura County have implemented one out of three projects identified in their implementation plan to achieve the TMDL. Permittees in the MC EWMP and Ventura County have made a good faith effort towards the design and planning of control measures to comply with the TMDL, but they have not implemented a sufficient number of projects to achieve the TMDL. While the fact that only 2.6% of the required BMP capacity in the MC EWMP and one out of three projects in Ventura County have been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that limited progress has been made to achieve the TMDL since it became effective nearly 15 years ago. Los Angeles County Permittees have improved progress since the incorporation of the TMDLs into the 2012 LA MS4 permit. The status of projects within Ventura County and Thousand Oaks is unclear due to lack of project status information within their annual reports, but it appears that these permittees have implemented one structural BMP to date.

Based on the original implementation schedule, the status of water quality, and the pace of implementation to date, along with considerations of the impact of the Woolsey Fire, and the fiscal impacts of COVID-19, a 5-year TMDL deadline extension is recommended. Five years is an appropriate extension for the TMDL implementation plan given the fact that the original schedule was over 15½ years long, bringing the total implementation schedule to over 20 years to address a pollutant that threatens public health. An extension of five years also considers the fact that limited progress has been made to implement structural control measures in most of the watershed. If necessary, a five-year extension of the TMDL implementation schedule through a Basin Plan amendment could be augmented in the future through a TSO, if appropriate. As discussed in Section C.2, permittees have the option to request a TSO for up to five years and an additional TSO for an additional five years if they need additional time to complete projects to achieve TMDL compliance.

Given the fact that the MC EWMP Group and Ventura County group have spent significant time on the design and planning of projects to attain the TMDL, permittees can move forward with the construction of those projects in three to four years per project. If the projects are spread out strategically throughout the watershed and over time, it is possible to complete the remaining projects needed to achieve the TMDL within a five-year

extension plus additional time through a TSO, if appropriate. It is noted that the MC EWMP will not be able to rely solely on Safe Clean Water Program to fund these projects and that the Ventura County permittees will not be able to rely solely on revenues from its Benefit Assessment Program, but the extension allows time to pursue additional sources of funding to complete the projects. A five-year extension also accounts for the fiscal impacts due to COVID-19, which as discussed in section D.7, are anticipated to last approximately three years. In conclusion, a five-year extension is consistent with federal guidance that TMDLs be attained in a reasonable period of time, while allowing permittees time to accrue Safe Clean Water Program funding and pursue additional funding for implementation of projects.

7. Malibu Creek Nutrients TMDL (above and below Malibou Lake)

a. Regulatory History

US EPA established two TMDLs in the Malibu Creek Watershed, a TMDL for Nutrients on March 21, 2003 (2003 TMDL) and a TMDL for Malibu Creek and Lagoon for Sedimentation and Nutrients to Address Benthic Community Impairments on July 2, 2013 (2013 TMDL). The 2003 TMDL applied to the whole watershed and the 2013 TMDL only applied to the portion of the watershed below Malibou Lake. The 2013 TMDL was more stringent and superseded the portions of the 2003 TMDL that applied to waterbodies below Malibou Lake. Because an implementation plan is not a required element of a TMDL established by US EPA, these TMDLs do not include implementation plans or schedules to achieve the LAs and WLAs assigned to discharges in the Malibu Creek Watershed.

The Los Angeles Water Board established an Implementation Plan for the two US EPA TMDLs on December 8, 2016 (Resolution No. R16-2009). The Implementation Plan describes the regulatory tools, implementation alternatives, implementation schedule, and associated monitoring requirements to achieve the LA and WLAs assigned by the two US EPA-established TMDLs. The Implementation Plan was subsequently approved by the State Water Board on February 22, 2017, and the Office of Administrative Law on May 16, 2017.

b. TMDL Compliance Schedule

The implementation schedule for the TMDL required Los Angeles County MS4 permittees above Malibou Lake to attain 2003 nutrient WLAs in 18 years and 9 months (December 28, 2021), which is approximately 4½ years from the effective date of the Implementation Plan. The implementation schedule required Ventura County MS4 permittees above Malibou Lake to attain 2003 nutrient WLAs within 5 years of the effective date of MS4 Permit adoption, and no later than 10 years from the effective date of the Implementation Plan. The MS4 permit is scheduled for the Board's consideration this year, which would result in an implementation schedule that is approximately 9 years from the effective date of the implementation plan. The implementation schedule required Los Angeles County MS4 permittees below Malibou Lake to attain 2013 nutrient WLAs in 10 years and 6 months (December 28, 2023), which is approximately 6½ years from the effective date of the Implementation Plan.

c. Water Quality Status

The Malibu Creek Nutrients Implementation Plan set a schedule and targets for nutrients based on requirements of the US EPA-established TMDLs. Nitrogen and phosphorus were analyzed at nine receiving water monitoring stations from August 2016 through March 2017. Monitoring was conducted by two groups within Los Angeles County, the Malibu Creek Watershed EWMP Group and the North Santa Monica Bay Coastal Watersheds EWMP Group.

Water quality still needs to improve in summer. In Los Angeles County, total nitrogen TMDL targets were exceeded 38% of the time in summer and 2% of the time during winter. Total phosphorus TMDL targets were exceeded 86% percent of the time during the summer period (there are no targets for total phosphorus during the winter period). See Table 30.

Table 29 Summary of Exceedances of Receiving Water Limitations in Receiving Water in Los Angeles County

Constituent	Time of Year (Summer/Winter)	Exceedances	Samples	Frequency of Exceedances (%)
Nitrate-N + Nitrite-N	Summer	5	13	38%
	Winter	1	43	2%
Total Phosphorus	Summer	12	14	86%

d. Plans and Progress Towards Achieving TMDLs

See Section E.6.d for a discussion of the plans and progress towards implementing the MCEWMP, the NSMBCW EWMP, and the Ventura County Stormwater Resource Plan.

e. Recommended TMDL Deadline Extension

Section E.7.c demonstrates that concentrations of nutrients in the Malibu Creek Watershed still exceed water quality standards in summer but attain water quality standards in winter. As described in Section A.1, extensions for dry weather-related TMDL deadlines are not warranted because the prohibition on non-stormwater discharges has been in place in MS4 permits since the 1990s. However, the exceedances of water quality standards for nutrients in summer may be wet-weather related exceedances. For example, of the 5 days sampled in summer from 2012 to 2017, one sample day occurred during wet weather, on which three total nitrogen samples and four total phosphorus samples exceeded the TMDL targets. Because wet weather may be a factor in increased nutrient loadings and the program of implementation does not distinguish between wet and dry weather, an extension of the TMDL is warranted for summer and winter WLAs.

As described in Section E.6.d, the NSMB EWMP RAA shows that no additional structural control measures are required to achieve the TMDLs. In the MC EWMP, jurisdictions have made efforts to implement non-structural BMPs such as public outreach and city ordinances to reduce nutrient loads. Jurisdictions in the MC EWMP have also adopted

LID ordinances that require post-construction BMPs and have implemented six structural BMPs, and almost completed one other. It appears that these efforts are sufficient to attain the winter WLAs and no additional time is needed for winter WLAs. Additional time may be needed for Los Angeles County permittees to attain the summer WLAs for the 2003 TMDL (above Malibou Lake) and the 2013 TMDL (below Malibou Lake). Given the fact that the MCW EWMP covers portions of the watershed both above and below Malibou Lake and it addresses both bacteria and nutrients, the deadlines for the 2003 Malibu Creek Watershed Nutrients TMDL and the 2013 Malibu Creek Nutrients and Sedimentation TMDL will be aligned with the recommended extension for the Malibu Bacteria TMDL of July 15, 2026 as discussed in Section E.6.e. Also as discussed in Section E.6.e, a TSO can be used to augment the TMDL implementation schedule, if appropriate. No additional extensions are proposed for Ventura County permittees because the existing implementation schedule already allows 5 years from the effective date of MS4 Permit adoption. Since the new MS4 permit is expected to be adopted this year, the final deadline applicable to Ventura County Permittees would be no sooner than 2026.

8. Santa Monica Bay Beaches Bacteria TMDL

a. TMDL regulatory history

The Santa Monica Bay Beaches Bacteria TMDL was adopted by the Los Angeles Water Board on January 24, 2002 (Dry Weather elements) and December 12, 2002 (Wet Weather elements) (Resolutions 2002-004 and 2002-022). The TMDL was approved by the State Water Board on September 19, 2002 (Dry Weather elements) and March 19, 2003 (Wet Weather elements), the Office of Administrative Law on December 9, 2002 (Dry Weather elements) and May 20, 2003 (Wet Weather elements), and US EPA on June 19, 2003. The TMDL was established to address exceedances of bacteria standards at Santa Monica Bay beaches to protect human health. The Santa Monica Bay Bacteria TMDLs became effective July 15, 2003.

This TMDL was revised by the Los Angeles Water Board on June 7, 2012 (Resolution No. R12-007) in order to update certain technical elements. The implementation schedule was not revised. The revised TMDL was approved by the State Water Board on May 19, 2013, the Office of Administrative Law on November 7, 2013, and US EPA on July 2, 2014.

b. TMDL schedule

The TMDL program of implementation divided the responsible permittees into seven jurisdictional groups. These groups included the Ballona Creek and Malibu Creek sub-watersheds, which were addressed in their own subsequent bacteria TMDLs. For wet weather, jurisdictional groups were required to achieve reductions in wet-weather exceedance days of 10% in six years, 25% in 10 years, 50% in 15 years, and 100% in 18 years.

c. Water Quality Status

Approximately 66 beaches or monitoring sites are protected by the Santa Monica Bay Bacteria TMDL. Bacteria water quality data is available from beach sampling conducted

by the City of Redondo Beach, the Los Angeles County Sanitation Districts, and the City of Los Angeles.

Bacterial indicator water quality still needs to improve at Santa Monica Bay beaches. In the 2012-2013 to 2016-2017 rain years, in wet weather, while many sites had fewer than the allowable number of exceedance days, about one third consistently exceeded the allowable number of exceedance days (see Table 31).

Table 30 Annual Wet-Weather Exceedance Days at Santa Monica Bay Beaches (November 1 – October 31)

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days
SMB-1-1	8	0	3	4	0	3	9	1	3	8	1	3	9	2	3
SMB-4-1	8	0	2	4	0	2	9	0	2	7	1	2	10	0	2
SMB-1-2	0	---	3	0	---	1	0	---	1	0	---	1	0	---	1
SMB-1-3	8	1	3	4	0	1	11	0	1	9	0	1	8	0	1
SMB-1-4	8	0	3	4	1	3	9	0	3	8	0	3	10	3	3
SMB-1-5	8	0	3	4	1	3	9	0	3	8	0	3	8	2	3
SMB-1-6	9	4	3	4	0	3	11	3	3	8	2	3	8	3	3
SMB-O-1	9	1	3	4	1	3	11	2	3	8	1	3	5	0	3
SMB-1-7	8	1	3	4	1	3	9	1	3	8	2	3	10	2	3
SMB-1-8	9	0	3	4	1	3	11	1	3	8	0	3	7	1	3
SMB-1-9	8	1	3	4	1	3	9	1	3	8	1	3	10	3	3
SMB-1-10	9	2	3	4	1	3	11	3	3	8	3	3	8	0	3
SMB-1-11	8	0	3	4	0	3	9	2	3	8	1	3	9	3	3
SMB-O-2	9	1	3	3	0	1	11	3	1	6	0	1	8	1	1
SMB-1-12	9	4	3	4	2	3	11	5	3	8	3	3	8	4	3
SMB-MC-1	8	1	3	4	1	3	8	2	3	8	0	3	9	0	3
SMB-MC-2	34	17	17	22	12	17	44	20	17	31	14	17	42	26	17
SMB-MC-3	8	4	3	4	0	3	8	5	3	4	1	3	6	3	3
SMB-1-13	9	3	3	4	0	3	12	2	3	7	1	3	7	3	3
SMB-1-14	9	1	3	5	2	3	11	2	3	8	2	3	8	0	3
SMB-1-15	8	0	3	4	1	3	8	2	3	7	1	3	10	2	3
SMB-1-16	8	0	3	4	0	2	11	3	2	0	---	2	8	1	2
SMB-1-17	1	0	3	2	0	2	4	0	2	2	0	2	4	0	2
SMB-1-18	34	6	17	22	4	17	44	14	17	31	9	17	42	18	17
SMB-2-1	9	1	3	0	---	3	7	5	3	8	2	3	8	3	3
SMB-2-2	5	3	3	3	1	3	7	5	3	6	2	3	8	3	3
SMB-2-3	7	2	3	4	0	3	7	1	3	6	0	3	6	3	3
SMB-2-4	9	2	3	4	0	3	11	5	3	8	3	3	8	2	3
SMB-2-5	8	3	3	4	1	3	9	4	3	8	1	3	9	5	3
SMB-2-6	8	3	3	4	0	3	9	0	3	8	2	3	10	4	3
SMB-2-7	33	13	17	22	10	17	44	27	17	31	12	17	42	27	17
SMB-2-8	8	1	3	4	0	3	9	3	3	8	1	3	10	5	3
SMB-2-9	8	2	3	4	2	3	9	7	3	8	1	3	10	6	3
SMB-2-10	9	4	3	4	0	3	11	4	3	8	2	3	8	5	3
SMB-2-11	9	1	3	4	0	3	11	2	3	8	4	3	8	1	3
SMB-2-12	8	0	3	4	1	3	9	2	3	8	5	3	10	6	3
SMB-2-13	9	2	3	4	1	3	11	3	3	8	3	3	8	1	3
SMB-2-14	8	1	3	4	0	3	9	1	3	8	3	3	10	2	3
SMB-2-15	8	2	3	4	1	3	9	1	3	8	2	3	10	4	3
SMB-3-1	8	3	3	4	1	3	9	3	3	8	2	3	10	5	3
SMB-3-2	8	3	3	4	2	3	9	5	3	8	3	3	10	5	3

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days	Sample Days	Exceedance Days	Allowable Exceedance Days
SMB-3-3	33	16	17	22	15	17	44	28	17	30	24	17	42	31	17
SMB-3-4	33	17	17	22	11	17	44	30	17	31	18	17	42	29	17
SMB-3-5	33	13	17	22	5	17	45	19	17	31	13	17	42	20	17
SMB-3-6	9	2	3	4	0	3	11	5	3	8	2	3	8	5	3
SMB-3-7	8	1	3	4	2	3	9	2	3	8	1	3	10	4	3
SMB-3-8	9	3	2	4	0	3	11	3	3	8	1	3	8	0	3
SMB-3-9	8	2	3	4	1	3	9	5	3	8	3	3	10	5	3
SMB-5-1	17	1	1*	4	1	1	9	1	1	8	1	1	12	1	1
SMB-5-2	38	17	17	21	8	17	46	22	17	34	13	17	42	22	17
SMB-5-3	17	2	2*	4	1	1	9	1	1	8	1	1	12	1	1
SMB-5-4	8	0	2	4	0	2	9	0	2	8	2	2	10	2	2
SMB-5-5	17	3	3*	4	0	2	9	0	2	8	1	2	12	1	2
SMB-6-1	38	17	17	21	12	17	46	23	17	33	10	17	41	24	17
SMB-6-2	42	20	14	4	1	2	9	2	2	8	2	2	12	2	2
SMB-6-3	8	1	3	4	0	3	9	1	3	8	2	3	12	4	3
SMB-6-4	8	1	3	4	0	3	9	1	3	8	2	3	10	3	3
SMB-6-5	17	1	2*	4	0	2	9	0	2	8	2	2	12	3	2
SMB-6-6	17	2	1*	4	0	1	9	0	1	8	0	1	12	1	1
SMB-7-1	8	0	2	7	0	2	8	0	2	9	0	2	13	4	2
SMB-7-2	8	0	0	7	0	0	6	0	0	8	0	0	13	0	0
SMB-7-3	8	0	1	7	0	1	8	1	1	9	0	1	13	2	1
SMB-7-4	8	0	1	7	0	1	8	0	1	9	0	1	13	2	1
SMB-7-5	8	0	1	7	0	1	8	0	1	9	0	1	13	0	1
SMB-7-6	8	0	1	7	2	1	8	0	1	9	0	1	13	1	1
SMB-7-8	8	0	1	7	0	1	8	0	1	9	1	1	13	3	1
SMB-7-9	8	0	1	7	0	1	8	0	1	9	0	1	13	0	1
SMB-BC-1	29	22	17	18	14	17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

** Allowable exceedance days is calculated based on sampling twice a week for the 2012-2013 wet-weather sampling period.*

For geometric means, about 20 of the beaches/monitoring sites frequently exceeded the geometric mean limit (see Table 32).

Table 31 Annual Geometric Mean (Geomean) Exceedances by Constituent (November 1 – October 31) at Santa Monica Bay Beaches

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans
SMB-1-1	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	1/52	0/53	0/53	0/53	0/47	1/47	3/47
SMB-4-1	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-1-2	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0	--/0
SMB-1-3	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-1-4	0/52	0/52	0/52	0/52	0/52	5/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	4/52	8/52
SMB-1-5	0/52	0/52	0/52	0/52	0/52	2/52	0/52	0/52	0/52	0/53	0/53	0/53	0/51	0/51	1/51
SMB-1-6	0/52	3/52	6/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	4/53	0/52	2/52	2/52
SMB-O-1	0/52	0/52	6/52	0/52	0/52	0/52	0/52	0/52	13/52	0/53	0/53	0/53	0/50	8/50	4/50
SMB-1-7	0/52	0/52	0/52	0/52	0/52	9/52	0/52	0/52	7/52	0/53	0/53	4/53	0/52	6/52	6/52
SMB-1-8	0/52	0/52	1/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-1-9	0/52	0/52	3/52	0/52	0/52	3/52	0/52	0/52	7/52	0/53	0/53	0/53	0/52	1/52	8/52
SMB-1-10	0/52	0/52	7/52	0/52	0/52	0/52	0/52	0/52	4/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-1-11	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	2/52	0/49	0/49	0/49	0/52	5/52	9/52
SMB-O-2	0/52	0/52	2/52	0/48	0/48	0/48	0/52	0/52	0/52	0/42	0/42	0/42	0/52	0/52	0/52
SMB-1-12	0/52	1/52	17/52	0/52	15/52	8/52	4/52	4/52	16/52	3/53	0/53	6/53	0/52	4/52	10/52
SMB-MC-1	0/52	0/52	0/52	0/52	0/52	0/52	0/50	0/50	0/50	0/53	0/53	0/53	0/52	0/52	0/52
SMB-MC-2	7/52	2/52	16/52	5/52	2/52	17/52	14/52	10/52	16/52	8/53	7/53	15/53	12/52	14/52	11/52
SMB-MC-3	0/52	0/52	23/52	0/50	0/50	5/50	1/38	0/38	13/38	0/3	0/3	1/2	0/34	0/34	3/34
SMB-1-13	0/52	0/52	11/52	0/52	0/52	0/52	0/52	0/52	8/52	0/53	0/53	0/53	0/52	0/52	4/52
SMB-1-14	0/52	0/52	0/52	0/52	0/52	5/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-1-15	0/52	0/52	0/52	0/52	0/52	13/52	0/47	0/47	1/47	0/53	0/53	0/53	0/52	0/52	1/52
SMB-1-16	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	2/52	0/14	0/14	0/14	0/52	0/52	0/52
SMB-1-17	--/0	--/0	--/0	0/1	0/1	0/1	0/4	0/4	0/4	0/4	0/4	0/4	0/6	0/6	0/6

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans
SMB-1-18	0/52	0/52	9/52	0/52	0/52	3/52	5/52	0/52	15/52	2/53	0/53	6/53	12/52	15/52	20/52
SMB-2-1	0/35	0/35	0/35	--/0	--/0	--/0	0/38	0/38	9/38	0/53	0/53	0/53	0/52	0/52	0/52
SMB-2-2	0/7	1/7	6/7	0/25	0/25	7/25	0/30	3/30	13/30	0/41	6/41	14/41	3/39	5/39	6/39
SMB-2-3	0/50	0/50	0/50	0/52	0/52	0/52	0/24	0/24	0/24	0/20	0/20	0/20	0/20	0/20	2/20
SMB-2-4	0/52	0/52	6/52	0/52	0/52	0/52	0/52	0/52	6/52	0/53	0/53	4/53	0/52	0/52	4/52
SMB-2-5	0/52	0/52	0/52	0/52	0/52	6/52	2/52	2/52	3/52	2/53	4/53	4/53	0/48	3/48	8/48
SMB-2-6	0/52	0/52	5/52	0/52	0/52	0/52	0/52	0/52	1/52	0/53	0/53	0/53	0/52	2/52	8/52
SMB-2-7	0/52	0/52	8/52	0/52	0/52	7/52	6/52	0/52	16/52	0/53	0/53	6/53	9/52	6/52	12/52
SMB-2-8	0/52	0/52	4/52	0/52	0/52	1/52	0/52	0/52	14/52	0/53	0/53	0/53	0/52	0/52	11/52
SMB-2-9	0/52	1/52	6/52	0/52	0/52	3/52	0/52	0/52	20/52	0/53	0/53	0/53	0/52	3/52	6/52
SMB-2-10	0/52	0/52	7/52	0/52	1/52	0/52	0/52	0/52	9/52	1/53	0/53	6/53	4/52	3/52	3/52
SMB-2-11	0/52	0/52	3/52	0/52	0/52	0/52	0/52	0/52	7/52	0/53	0/53	5/53	0/52	1/52	0/52
SMB-2-12	0/52	0/52	1/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	2/53	1/52	0/52	10/52
SMB-2-13	0/52	0/52	4/52	0/52	0/52	6/52	0/52	1/52	11/52	0/53	0/53	5/53	0/52	0/52	0/52
SMB-2-14	0/52	0/52	0/52	0/52	0/52	2/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-2-15	0/52	0/52	5/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	1/53	0/52	0/52	7/52
SMB-3-1	0/52	0/52	6/52	0/52	0/52	4/52	0/52	0/52	13/52	0/53	0/53	1/53	0/52	0/52	13/52
SMB-3-2	0/52	0/52	14/52	0/52	0/52	14/52	3/52	0/52	24/52	0/53	0/53	0/53	0/52	0/52	17/52
SMB-3-3	35/52	0/52	22/52	43/52	0/52	28/52	45/52	1/52	24/52	44/53	0/53	10/53	41/52	9/52	7/52
SMB-3-4	8/52	2/52	20/52	0/52	0/52	9/52	8/52	0/52	20/52	4/53	0/53	12/53	11/52	7/52	12/52
SMB-3-5	0/52	0/52	9/52	0/52	0/52	1/52	0/52	0/52	8/52	0/53	0/53	4/53	1/52	2/52	8/52
SMB-3-6	5/52	3/52	8/52	0/52	0/52	0/52	4/52	0/52	10/52	0/53	0/53	4/53	2/52	0/52	6/52
SMB-3-7	0/52	0/52	3/52	0/52	0/52	6/52	0/52	0/52	9/52	0/53	0/53	3/53	0/52	1/52	9/52
SMB-3-8	0/52	0/52	6/52	0/52	0/52	1/52	9/52	7/52	25/52	0/53	1/53	9/53	0/52	0/52	0/52

Station ID	2012 – 2013			2013 – 2014			2014 – 2015			2015 – 2016			2016 – 2017		
	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans	Fecal Coliform Exceedances/ No. of Calculated Geomeans	Total Coliform Exceedances/ No. of Calculated Geomeans	Enterococcus Exceedances/ No. of Calculated Geomeans
SMB-3-9	0/52	0/52	3/52	0/52	0/52	6/52	0/52	0/52	6/52	0/53	0/53	0/53	0/52	0/52	9/52
SMB-5-1	0/52	0/52	0/52	0/52	0/52	0/52	0/52	1/52	0/52	0/53	5/53	0/53	0/52	0/52	0/52
SMB-5-2	0/52	0/52	8/52	0/52	0/52	2/52	0/52	0/52	3/52	0/53	0/53	1/53	5/52	0/52	7/52
SMB-5-3	0/52	0/52	0/52	0/52	0/52	0/52	0/52	1/52	0/52	0/53	5/53	0/53	0/52	0/52	0/52
SMB-5-4	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	1/53	0/52	0/52	0/52
SMB-5-5	0/52	0/52	2/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	4/53	0/53	0/52	0/52	6/52
SMB-6-1	0/52	0/52	12/52	1/52	0/52	9/52	0/52	0/52	11/52	0/53	0/53	3/53	5/52	5/52	9/52
SMB-6-2	8/52	0/52	29/52	0/52	8/52	13/52	5/52	3/52	19/52	4/53	4/53	4/53	0/52	0/52	5/52
SMB-6-3	0/52	0/52	1/52	0/52	0/52	0/52	0/52	2/52	4/52	1/53	5/53	0/53	0/52	0/52	7/52
SMB-6-4	0/52	0/52	6/52	0/52	0/52	1/52	0/52	0/52	12/52	0/53	0/53	0/53	0/52	0/52	4/52
SMB-6-5	0/52	0/52	0/52	0/52	0/52	0/52	1/52	1/52	0/52	1/53	5/53	0/53	1/52	0/52	11/52
SMB-6-6	0/52	0/52	0/52	0/52	0/52	0/52	3/52	2/52	0/52	4/53	4/53	0/53	0/52	0/52	1/52
SMB-7-1	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	2/52
SMB-7-2	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-7-3	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-7-4	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	1/52
SMB-7-5	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-7-6	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-7-8	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-7-9	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/52	0/53	0/53	0/53	0/52	0/52	0/52
SMB-BC-1	7/52	13/52	11/52	0/42	6/42	8/42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

d. Plans and Progress Towards Achieving TMDLs

i. Projects identified in EWMPs

Most permittees subject to the Santa Monica Bay Bacteria TMDL chose to form watershed management groups to jointly implement WMPs or EWMPs. The City of Rolling Hills chose to implement the requirements of the permit separately. The groups are shown in Table 33.

Table 32 Watershed Management Groups for the Santa Monica Bay Bacteria TMDL

Group Name	Cities/Permittees Involved	Compliance Method
North Santa Monica Bay Coastal Watersheds (NSMBCW)	Malibu, County, LACFCD	EWMP
Santa Monica Bay Watershed Jurisdictional Groups 2 & 3 (JG2&3)	El Segundo, Los Angeles, Santa Monica, County, LACFCD	EWMP
Beach Cities Watershed Management Group (Beach Cities)	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD	EWMP
Peninsula EWMP Agencies (PV)	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, County, LACFCD, Rolling Hills (CIMP only)	EWMP
Rolling Hills	Rolling Hills	Baseline Requirements*
Santa Monica Bay Watershed Jurisdiction 7 (JG7)	Los Angeles, LACFCD	WMP

** The City of Rolling Hills is subject to the baseline requirements in Part VI.D of the MS4 Permit and is required to demonstrate compliance with receiving water limitations pursuant to Part V.A and applicable interim water quality-based effluent limitations in Part VI.E.*

NSMBCW

The NSMBCW EWMP determined the target load reduction for bacteria to be 7.3%. The EWMP did not calculate corresponding BMP storage capacities for the prescribed reductions. The EWMP prescribes the following distributed and regional structural BMPs:

- Topanga Canyon (Regional Project)
- Ramirez Canyon (Distributed BMPs)
- Latigo Canyon (Distributed BMPs)
- Corral Canyon (Distributed BMPs)
- Marie Canyon (Distributed BMPs)
- Winter Canyon (Distributed BMPs)
- Sweetwater Canyon (Distributed BMPs)
- Las Flores Canyon (Distributed BMPs)
- Las Flores Canyon (Distributed BMPs)

The EWMP explains that progress toward implementation of these BMPs will be reported annually, based on the total area treated.

Santa Monica Bay Watershed Jurisdictions 2 & 3 (JG2&3)

The JG2&3 EWMP determined the target load reduction for bacteria to be 35% to be met through a combination of non-structural BMPs, distributed green streets BMPs, existing centralized/regional BMPs, and fast-tracked centralized/regional BMPs. The EWMP calculated a corresponding BMP capacity of 313.7 acre-feet (see Table 34).

Table 33 Summary of Proposed Structural BMP Volume in the JG2&3 EWMP

Subwatershed	Distributed Green Streets BMPs (ac-ft)	Regional/Centralized BMP (ac-ft)
West of 2-01	0.03	-
SMB 2-01	1.49	-
Between 2-01 and 2-02	0.03	-
SMB-2-02	6.05	6.08
SMB-2-03	0.58	-
SMB-2-05	1.70	-
SMB-2-04	6.71	-
Between 2-04 and 2-06	0.43	-
SMB-2-06	0.40	5.53
Between 2-06 and 2-07	5.60	-
SMB-2-07	-	63.70
Between 2-07 and 3-01	0.17	-
SMB-3-01	3.52	8.48
Between 3-01 and 3-02	0.10	-
SMB-3-02	5.62	7.35
SMB-3-03	-	3.67
SMB-3-04	54.50	25.10
SMB-3-09	-	0.79
SMB-3-05	-	9.39
SMB-3-06	6.51	15.30
SMB-3-07	-	0.82
SMB-3-08	0.10	-
SMB-2-10	1.10	-
Between 2-10 and 2-11	0.27	-
SMB-2-11	1.49	37.30
SMB-2-12	-	-
SMB-2-13	-	3.43
SMB-2-14	-	-
SMB-2-15	-	29.60
South of SMB-2-15	-	-
Total	**96.7 (31% of total)**	**217 (69% total)**

Beach Cities

The Beach Cities EWMP determined the overall target load reduction for bacteria to be 26%, with a 46.3% reduction at compliance monitoring location SMB-5-02, a 44.2%

reduction at compliance monitoring location SMB-6-01, and a 46.9% reduction at compliance monitoring location BCSump. The EWMP did not calculate corresponding BMP capacities for the prescribed reductions. Nine compliance monitoring locations were assigned a target load reduction of zero to reflect their historic good water quality and consistent with their designation as beaches subject to anti-degradation requirements by the TMDL.

PV

The PV EWMP proposed several regional BMPs in the Los Angeles Harbor and Machado Lake sub-watersheds and one completed project, San Ramon Canyon Diversion Project for the Santa Monica Bay coastal sub-watershed. No other structural BMPs were proposed for the Santa Monica Bay coastal sub-watershed (PV EWMP, 2016).

Rolling Hills

The City of Rolling Hills has not proposed any projects.

JG7

The JG7 group consists of the City of Los Angeles and the Los Angeles County Flood Control District. JG7 has not proposed any projects to address indicator bacteria other than curbside catch basin inserts for trash.

ii. Projects that have been completed

NSMBCW

According to the 2018-19 Annual Report, responsible jurisdictions have mainly conducted planning and design as they have pursued various funding sources. Many of the planning efforts were delayed due to the Woolsey Fire in November 2018, which caused an evacuation of the entire City of Malibu and the diversion of resources for recovery efforts. Table 35 summarizes the NSMBCW group's estimated progress (23%) toward EWMP milestones as a function of area treated.

Table 34. NSMBCW Progress Toward Final 2021 EWMP Milestones

Receiving Water	Jurisdiction	Treated Area Target	Estimated Implementation Progress for Reporting Year Based on Treated Area	Estimated Implementation Progress for Permit Term Based on Treated Area
NSMBCW-All	Malibu	202.3	2.36	40.53
NSMBCW-All	Unincorporated County	96.8	0	27.89
Total		299.1	2.36	68.42

JG2&3

According to the 2018-19 Annual Report, progress has been demonstrated through the completion of the Temescal, Penmar, Los Amigos, Coastline Drive, and Santa Monica Pier projects. Other planned projects in the EWMP (i.e., Westchester and Mandeville projects) did not proceed past the planning/design phases. The other proposed projects in the EWMP were either not pursued or are still in the concept report phase. Table 36 presents the estimated BMP retention capacity of projects implemented since 2012 as 30.42 acre-feet, or 9.7% of the prescribed BMP capacity of 313.7 in the EWMP.

Table 35. Cumulative Summary of Projects in the JG2&3 EWMP that Retain Runoff Completed Since Permit Effective Date

Receiving Water	No. of New Development/Re-development Projects Completed since 12/28/12	No. of Other Projects Designed to Intercept Runoff Completed since 12/28/12	Area Addressed by Projects (acres)	Total BMP Retention Capacity of Projects Completed since 12/28/12 (acre-feet)	Est. Total Runoff Volume Retained Onsite for the Reporting Year (acre-feet)
Santa Monica Bay	1508	34	14885.61	30.42	11501.53
Total	1508	34	14885.61	30.42	11501.53

Beach Cities

According to the 2018-19 Annual Report, the Beach Cities EWMP group has demonstrated progress in the installation of a low-flow diversion and infiltration project at the Torrance Circle and construction of distributed green streets at 8th Street in Hermosa Beach. The group also completed projects that were not listed in their EWMP or reported in their Annual Reports, including:

- Pier Avenue Improvement project
- Hermosa Strand Infiltration Trench
- Porous Concrete Paving project
- Manhattan Greenbelt Infiltration project
- Catchbasin screening devices in the Esplanade Street resurfacing project
- Alta Vista Park Diversion and Re-use project
- Sapphire Street Diversion and Infiltration project
- City Yard Bioswales
- Torrance Beach CDS units
- Stormwater Basins (Entradero, Henrietta, and Amie Basins) Enhancement project

(Beach Cities, 2017, 2018c, 2019)

These projects were presented to staff by the Beach Cities in their presentation on July 12, 2018 (Beach Cities, 2018c). Table 37 summarizes the group's estimated progress toward EWMP milestones based on implementation of non-structural BMPs, assumed Caltrans and Industrial General Permit compliance, and existing regional projects implemented since the permit effective date. According to the group's estimates, the SMB-5-02 compliance monitoring location has completed 3.6% of its target load reduction and the SMB-6-01 and BC Sump compliance locations have completed 18.7% of their target load reductions.

Table 36. Beach Cities Progress Toward Final 2021 EWMP Milestones

Analysis Region	Target Load Reduction (TLR) as of baseline for the critical condition						EWMP Target Load Reduction Goal to meet Water Quality Endpoint	Progress Toward TLR Goal
	Non-Structural BMPs (Non-Modeled)	Public Retrofit Incentives+ Redevelopment	Non-MS4	Regional BMPs	Distributed BMPs	Distributed BMP Implementation Level		
SMB 5-01	5%	2%	0%	0%	0%	N/A	0%	2.5%
SMB O-06	5%	2%	0%	0%	0%	N/A	0%	2.5%
SMB 5-02	5%	4%	2%	36%	3%	5% MFR/COM/SFR	44%	3.6%
SMB 5-02/ 5-03	5%	3%	0%	0%	0%	N/A	0%	2.5%
SMB 5-03	5%	3%	0%	0%	0%	N/A	0%	2.5%
SMB 5-03/ 5-04	5%	4%	0%	5%	0%	N/A	0%	7.7%
SMB 5-04	5%	5%	0%	1%	1%[22]	N/A	0%	4.9%
SMB 5-04/ 5-05	5%	4%	0%	2%	0%	N/A	0%	4.4%
SMB 5-05	5%	4%	5%	3%	0%	N/A	0%	5.70%
SMB 5-05/ 6-01	5%	3%	0%	2%	0%	N/A	0%	4.5%
SMB 6-01 + BC Sump	5%	3%	3%	33%	2%	25% MFR/COM/SFR	42%	18.7%
SMB 6-01/ 6-02	5%	2%	4%	0%	0%	N/A	0%	2.5%
SMB 6-02	5%	3%	1%	4%	0%	N/A	0%	2.5%
SMB 6-03	5%	3%	5%	10%	0%	N/A	0%	2.5%
SMB 6-04	5%	4%	3%	0%	0%	N/A	0%	2.5%
SMB 6-05	5%	3%	6%	0%	0%	N/A	0%	2.5%
SMB O-08	5%	2%	0%	0%	0%	N/A	0%	2.5%
SMB 6-06	5%	5%	0%	0%	0%	N/A	0%	2.5%

iii. Projects that are nearly completed

NSMBCW

According to the 2016-17, 2017-18, and 2018-19 Annual Reports, planning and design phases were delayed for Latigo Canyon, Marie Canyon, and Sweetwater Canyon. Most projects were delayed in 2018-19 due to the Woolsey Fire. The Viewridge Super Green Streets project (Topanga Canyon) is pursuing funding and is in the design phase. An application for the project was submitted, but withdrawn, for the 2020 Safe Clean Water Program. It is expected that the application will be resubmitted in 2021. According to the application, the project will treat an area of 78 acres, which applying the NSMBCW group's method of estimating progress as a function of area treated, would bring the total area treated to 146.42, or 49% of the required area to be treated.

JG2&3

The projects that are likely to be completed in the near term in JG2&3 based on the availability of funding from various sources are listed in Table 38.

Table 37. Projects that are nearly completed in JG2&3

Jurisdiction	Project Name	BMP Capacity (acre-feet)	Total Cost	Funding Source(s)	Status
City of Santa Monica	Sustainable Water Infrastructure Project	7.12	$15.1 M	Safe Clean Water Program ($7.5 M)	Construction

It is anticipated that an additional 7.12 acre-feet will be addressed by structural control measures in the near term based on the current availability of funding. This brings the total BMP capacity implemented to 37.54 acre-feet of the required 313.7 acre-ft, or 12% of the required volume capture, to meet TMDL requirements.

iv. Time needed to complete remaining projects based on anticipated revenue

Staff separately estimated the number of years that would be needed to complete all remaining EWMP projects for the NSMBCW, JG2&3, and Beach Cities. (PV, Rolling Hills, and JG7 proposed no projects.)

NSMBCW

With 51% of the projects remaining and a total capital cost of $34.51 M, the estimated cost of remaining projects is $17.60 M. The annual revenue from the Safe Clean Water Program for NSMBCW was estimated to be $1.361 M, and the matched funding was estimated to be $1.402 M, resulting in total annual funding of $2.764 M. The estimated cost of the remaining projects ($17.60 M) divided by total annual funding ($2.764 M) yields an estimated 6 years for NSMBCW to achieve full compliance with the Santa Monica Bay Bacteria TMDL. For cost estimates, funding, and estimated years to compliance by municipality, see Table A.4 in the Appendix.

JG2&3

With 88% of the volume remaining and a total capital cost of $661.35 M, the estimated cost of remaining projects is $581.98 M. The annual revenue from the Safe Clean Water Program for JG2&3 was estimated to be $8.07 M, and the matched funding was estimated to be $8.31 M, resulting in total annual funding of $16.38 M. The estimated cost of the remaining projects ($581.98 M) divided by total annual funding ($16.38 M) yields an estimated 35 years for JG2&3 to achieve full compliance with the Santa Monica Bay Bacteria TMDL. For cost estimates, funding, and estimated years to compliance by municipality, see Table A.5 in the Appendix.

Beach Cities

Assuming 81.3% of the projects remaining and a total capital cost of $53.24 M, the estimated cost of remaining projects is $43.29 M. The annual revenue from the Safe Clean Water Program for the Beach Cities was estimated to be $1.76 M, and the matched funding was estimated to be $1.82 M, resulting in total annual funding of $3.58 M. The estimated cost of the remaining projects ($43.29 M) divided by total annual funding ($3.58 M) yields an estimated 12 years for the Beach Cities to achieve full compliance with the Santa Monica Bay Bacteria TMDL. For cost estimates, funding, and estimated years to compliance by municipality, see Table A.6 in the Appendix.

e. Recommended TMDL Deadline Extension

Section E.8.c demonstrates that water quality is improving. However, water quality still fails to meet allowable number of exceedance days of bacteria standards during wet weather at many beaches. It has been 22 years since Santa Monica Bay beaches were placed on the CWA section 303(d) list for bacteria in 1998. It has been 17 years since the Santa Monica Bay Beaches Bacteria TMDL became effective on July 15, 2003. The original TMDL implementation schedule, in consideration of the input from permittees and other stakeholders, was set at 18 years, or July 15, 2021, to allow for an integrated water resources approach. This schedule was deemed appropriate because it allowed time for permittees to pursue an integrated approach, obtain funding, and sequence projects to ensure that water quality was restored, and public health protected.

As described in Section E.8.d, since the TMDL became effective and was incorporated into the MS4 Permit, permittees have made varying degrees of progress in planning and design but have not implemented a sufficient number of structural control measures to achieve the TMDL. The NSMBCW group has implemented 49% of their projects, the JG2&3 group has implemented 12% of their projects, and the Beach Cities group has implemented 18.7% of their projects. While the fact that only a relatively small to moderate percentage of the required BMPs have been implemented indicates the need for additional time to achieve the TMDL, it also illustrates that somewhat limited progress has been made to achieve the TMDL since it became effective over 17 years ago.

Based on the original implementation schedule, the status of water quality, the pace of implementation to date, the number of projects that remain to be implemented, and the fiscal impacts of COVID-19, a 3-year TMDL deadline extension is recommended for the NSMBCW group, a 5-year TMDL deadline extension is recommended for JG2&3, and a 3-year TMDL deadline extension is recommended for beaches in the Beach Cities group that are not subject to the TMDL's antidegradation provisions. No extension is recommended for the beaches subject to the TMDL's antidegradation provisions or for PV, Rolling Hills, or JG7, since no projects remain to be implemented in these areas.

The lengths of these extensions are appropriate, considering the relative degree of implementation by the EWMP groups and given the fact that the original schedule was 18 years long for a pollutant that threatens public health. These extensions bring the total implementation schedules to 21 to 23 years. These extensions also consider the fact that only limited to moderate progress has been made to implement structural control measures in the watershed. A three- to five-year extension of the TMDL implementation schedule through a Basin Plan amendment can be augmented in the future through a TSO, if appropriate. As discussed in Section C.2, permittees have the option to request a TSO for up to five years and an additional TSO for an additional five years if they need additional time to complete projects to achieve TMDL compliance. Given the fact that the Santa Monica Bay EWMP groups have spent significant time on the design and planning of projects to attain the TMDL, permittees can move forward with the construction of those projects in three to four years per project. If the projects are spread out strategically throughout the watershed and over time, it is possible to complete the remaining projects needed to achieve the TMDL within a three- to five-year extension plus additional time through a TSO. It is noted that the Santa Monica Bay EWMP groups will not be able to rely solely on the Safe Clean Water Program to fund these projects, but the extension allows time to pursue additional sources of funding to complete the projects. A three- to

five-year extension also accounts for the fiscal impacts due to COVID-19, which as discussed in Section D.7, are anticipated to last approximately three years.

In conclusion, these extensions are consistent with federal guidance that TMDLs be attained in a reasonable period of time, while allowing permittees time to accrue Safe Clean Water Program funding and pursue additional funding for implementation of projects.

9. Other TMDLs

On August 21, 2020, the Ventura Countywide Stormwater Quality Management Program requested that the Los Angeles Water Board also consider TMDL deadline extensions for certain TMDLs in Ventura County. The highest priority TMDLs per the request, due to upcoming or past deadlines, were the Malibu Creek Bacteria TMDL and Channel Islands Harbor Bacteria TMDL.

The Malibu Creek Bacteria TMDL is analyzed in this document for both the Los Angeles County and Ventura County portions of the watershed.

The final TMDL deadline for the Channel Islands Harbor Bacteria TMDL, which addresses bacteria exceedances at Hobie and Kiddie beaches in the Channel Islands Harbor, was December 2018. Therefore, in effect, MS4 permittees assigned WLAs in the TMDL have had an additional two years to achieve the TMDL, so no further extension due to the fiscal impacts of COVID-19 is warranted.

On September 25, 2019, April 17, 2020 and July 24, 2020, the Los Cerritos Channel Watershed Group requested an extension of the Los Cerritos Channel Metals TMDL final deadline by five years. US EPA established the Los Cerritos Channel TMDL for Metals on March 17, 2010. The Los Angeles Water Board adopted an Implementation Plan for the San Gabriel River and Impaired Tributaries Metals and Selenium TMDL, also established by US EPA, and the Los Cerritos Channel Metals TMDL on June 6, 2013 (Resolution No. R13-004). The Implementation Plan establishes a final deadline of September 30, 2026 for the wet weather WLAs. The focus of this report is on TMDLs with critical approaching deadlines in the next one to three years. TMDLs with compliance dates further out, such as the Los Cerritos Channel Metals TMDL, are not being considered at this time.

F. Conclusions and Recommendations

For each TMDL, recommendations for extensions to final deadlines considered the original length of the TMDL schedule, whether meaningful progress has been made in achieving the TMDL from a water quality standpoint, which projects and programs have been completed and initiated, and which projects are planned as documented in WMPs, EWMPs, SIPs, the Ventura County Stormwater Resource Plan, and Ventura County TMDL implementation plans. Other watershed-specific factors such as the size of the watershed in the case of Marina del Rey, and the impacts of the Woolsey Fire in the case of Malibu Creek and Northern Santa Monica Bay were also considered. Staff also estimated the availability of Safe Clean Water Program and other funds and estimated the amount of time needed to complete projects to attain the TMDLs based on those funds. However, staff did not rely on these time estimates in making the recommendations for deadline extensions because of the uncertain and imprecise assumptions underlying the estimates.

Additionally, to ensure the ability of MS4 permittees subject to near-term TMDL deadlines to manage the additional fiscal challenge brought about by the COVID-19 pandemic, staff considered economic forecasts and recommend that 3 years be added to final deadlines for the wet weather TMDLs with near-term final deadlines, with the exception of beaches subject to the Santa Monica Bay Bacteria TMDL's antidegradation provisions or for PV, Rolling Hills, or JG7, as discussed in section E.8.e.

Finally, for TMDLs in the same watershed, the alignment of final implementation deadlines is recommended, so that the EWMPs for those watersheds can be structured to address all TMDLs at the same time and to simplify reporting. Table 38 includes all the recommendations by TMDL.

Table 38 TMDL Extension Date Recommendations

TMDL	TMDL effective date	Current implementation deadline	Recommended revised implementation deadline
Ballona Creek Bacteria TMDL *wet weather*	April 27, 2007	July 15, 2021	July 15, 2026
Ballona Creek Estuary Toxics TMDL	January 11, 2006	Metals, Chlordane and DDTs: January 11, 2021	July 15, 2026
		PCBs: January 11, 2025	July 15, 2026
Ballona Creek Metals TMDL *wet weather*	January 11, 2006	January 11, 2021	July 15, 2026
Marina del Rey Bacteria TMDL *wet weather*	March 18, 2004	July 15, 2021	July 15, 2024
Marina del Rey Toxics TMDL	March 22, 2006	Back Basins: March 22, 2018	July 15, 2024
		Front Basins: March 22, 2021	July 15, 2024
Santa Monica Bay Bacteria TMDL *wet weather*	July 15, 2003	July 15, 2021	NSMBCW: July 15, 2024 JG2&3: July 15, 2026 Beach Cities (not including beaches subject to antidegradation): July 15, 2024 Beaches subject to antidegradation: no change
Malibu Creek Bacteria TMDL *wet weather*	January 24, 2006	July 15, 2021	July 15, 2026
Malibu Creek Nutrients TMDL	March 21, 2003	December 28, 2021 (above Malibou Lake, Los Angeles County)	July 15, 2026
		December 28, 2017 (below Malibou Lake)	n/a*
Malibu Creek Nutrients and Sedimentation TMDL (below Malibou Lake)	July 2, 2013	December 28, 2023	July 15, 2026

*Note: *The 2003 WLAs assigned to discharges below Malibou Lake were superseded by the 2013 WLAs.*

Los Angeles Water Board staff will continue to meet with stakeholders to discuss the potential need for additional TMDL extensions and to consider if additional TMDL final implementation deadline adjustments are necessary either through a Basin Plan amendment or a TSO, or a combination of the two approaches.

G. References

Ballona Creek Watershed Management Group (2016). Enhanced Watershed Management Program for the Ballona Creek Watershed.

Ballona Creek Watershed Management Group (2017). Ballona Creek Watershed Management Group Annual Report 2016-2017.

Ballona Creek Watershed Management Group (2018). Ballona Creek Watershed Management Group Annual Report 2017-2018.

Ballona Creek Watershed Management Group (2019). Ballona Creek Coordinated Integrated Monitoring Program

Ballona Creek Watershed Management Group (2019). Ballona Creek Watershed Management Group Annual Report 2018-2019.

Beach Cities Enhanced Watershed Management Program Group (2017). Los Angeles County Municipal Storm Water Permit Annual Report 2016-2017.

Beach Cities Enhanced Watershed Management Program Group (2019). Enhanced Watershed Management Program for the Beach Cities Watershed Management Area-Santa Monica Bay and Dominguez Channel Watersheds.

Beach Cities Enhanced Watershed Management Program Group (2018). Machado Lake Enhanced Watershed Management Project BMP Updates Presentation.

Beach Cities Enhanced Watershed Management Program Group (2018). Los Angeles County Municipal Storm Water Permit Annual Report 2017-2018.

Beach Cities Enhanced Watershed Management Program Group (2019). Los Angeles County Municipal Storm Water Permit Annual Report 2018-2019.

Burns, Patrick and Flaming, Daniel (2011). Water Use Efficiency and Jobs. Economic Roundtable.

California Legislative Analyst's Office (2020). The 2020-21 Budget: California's Spring Fiscal Outlook

Central Santa Monica Bay Stormwater Investment Plan (2020). Central Santa Monica Bay Watershed Steering Committee, Los Angeles County Safe Clean Water Program.

Choi, Candice and Michelle R. Smith (2020). States ramp up for biggest vaccination effort in US history. Associated Press.

Christopher, Ben (2020). Everything happened all at once: Can California cities weather the COVID recession? Cal Matters.

City of Los Angeles. (2020, February 20). Input on December 2019 Working Proposal of the Regional Phase I Municipal Separate Storm Sewer System (MS4) Permit [Letter].

City of Malibu. (2020, January 3). Comments on Staff Working Proposal of the Regional I Municipal Separate Storm Sewer (MS4) Permit [Letter].

City of Rancho Palos Verdes. (2020, February 4). Comment Letter- New Regional Phase I NPDES Permit Order for MS4 Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties Staff Working Proposal [Letter].

City of South Pasadena. (2020, February 6). Comment Letter- New Regional Phase I NPDES Permit Order for MS4 Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties Staff Working Proposal [Letter].

Cohen, Patricia and Tiffany Hsu (2020). $300 Unemployment Benefit: Who Will Get It and When? New York Times.

County of Los Angeles, Los Angeles County Flood Control District, City of Los Angeles, and City of Culver City (2015). Marina del Rey Enhanced Watershed Management Program.

County of Los Angeles Department of Public Works. (2020, January 30). County of Los Angeles and Los Angeles County Flood Control District Comments on Staff Working Proposal for the Regional Phase I Municipal Separate Storm Sewer System (MS4) Permit [Letter].

County of Los Angeles, Los Angeles County Flood Control District, City of Los Angeles, and City of Culver City (2016). Revised Marina del Rey Enhanced Watershed Management Program.

County of Ventura and the Ventura County Watershed Protection District (2013). Malibu Creek Bacteria and Nutrient Total Maximum Daily Load Implementation Plan Addendum.

Curum, Jonathan, Denise Grady, and Carl Zimmer (2020). Coronavirus Vaccine Tracker. The New York Times.

Dominguez Channel Watershed Management Group. (2020, January 31). Comment Letter-Working Proposal of the Regional Phase I Municipal Storm Sewer System (MS4) Permit [Letter].

Federal Reserve (2020). Summary of Economic Projections.

Glick, P., E. Powell, S. Schlesinger, J. Ritter, B.A. Stein, and A. Fuller (2020). The Protective Value of Nature: A Review of the Effectiveness of Natural Infrastructure for Hazard Risk Reduction. National Wildlife Federation.

Lin II, Rong-Gong (2020). Racism and inequity fuel coronavirus-related death toll among L.A. County minorities, officials say. Los Angeles Times

Los Angeles Alliance for a New Economy (LAANE) (2018). Liquid Assets. How Stormwater Infrastructure Builds Resilience, Health, Jobs, and Equity.

Los Angeles and Ventura Counties, Caltrans, and the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Thousand Oaks, and Westlake Village (2007). Integrated Total Maximum Daily Load Implementation Plan for the Malibu Creek Watershed

Los Angeles Regional Water Quality Control Board (2014). Time Scheduled Order No. R4-2014-0142 requiring the County of Los Angeles, the Los Angeles County Flood Control District, and the City of Los Angeles to comply with requirements pertaining to discharges of Bacteria during Dry Weather to the Back Basins of Marina Del Rey Harbor

and Marina Beach prescribed in Order no. R4-2012-0175 (NDPES Permit No. CAS004001).

Los Angeles Regional Water Quality Control Board (2015). Time Scheduled Order No. R4-2015-018 Requiring the City of Los Angeles, the Los Angeles County Flood Control District, The City of Beverly Hills, the City of Culver City, The City of Inglewood and the City of West Hollywood to comply with requirements prescribed in Order no. R4-2012-0175 (NDPES Permit No. CAS004001).

Los Angeles Regional Water Quality Control Board (2017). Malibu Creek Watershed TMDL for Nutrients and the Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients Implementation Plan.

Los Angeles Regional Water Quality Control Board (2019). Working Proposal Regional MS4 Permit, Attachment O.

Los Angeles Regional Water Quality Control Board (2020a). Tentative Regional MS4 Permit, Attachment O.

Los Angeles Regional Water Quality Control Board (2020b). Transcript from the May 14, 2020 Los Angeles Regional Water Quality Control Board Meeting.

Los Angeles Regional Water Quality Control Board (2020c). MS4 Monitoring Data Report. Sections 8-11.

Los Cerritos Channel Watershed Group. (2020, April 17). ATTN: Chair Munoz- Working Proposal for a New Regional MS4 Permit [Letter].

Los Cerritos Channel Watershed Group. (2020, July 24). Demonstrating Compliance with the 2020 TMDL Milestone [Letter].

Los Cerritos Channel Watershed Group. (2020, February 5). Staff Working Proposal for the New Regional Phase I NPDES Permit Order for MS4 Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties [Letter].

Lower Los Angeles River Watershed Committee. (2020, February 6). Lower Los Angeles River Watershed Management Group Comment Letter- New Regional Phase I NPDES Permit Order for MS4 Discharges within the Coastal Watershed of Los Angeles and Ventura Counties Staff Working Proposal [Letter].

Lower San Gabriel River Watershed Management Group. (2020, February 11). Comment Letter- New Regional Phase I NPDES Permit Order for MS4 Discharges within the Coastal Watersheds of the Los Angeles and Ventura Counties Staff Working Proposal [Letter].

Malibu Creek Enhanced Watershed Management Program Group (2018). Malibu Creek Enhanced Watershed Management Program.

Malibu Creek Enhanced Watershed Management Program Group (2016). Malibu Creek Enhanced Watershed Management Program Annual Report 2015-2016.

Malibu Creek Enhanced Watershed Management Program Group (2017). Malibu Creek Enhanced Watershed Management Program Annual Report 2016-2017.

Malibu Creek Enhanced Watershed Management Program Group (2018). Malibu Creek Enhanced Watershed Management Program Annual Report 2017-2018.

Malibu Creek Enhanced Watershed Management Program Group (2019). Malibu Creek Enhanced Watershed Management Program Annual Report 2018-2019.

Marina del Rey Enhanced Watershed Management Group (2017). Los Angeles County Municipal Storm Water Permit (Order No. R4-2012-0175 as amended by State Board Order WQ 2015-0075) NPDES No. CAS004001 Annual Report 2016-2017.

Marina del Rey Enhanced Watershed Management Group (2018). Los Angeles County Municipal Storm Water Permit (Order No. R4-2012-0175 as amended by State Board Order WQ 2015-0075) NPDES No. CAS004001 Annual Report 2017-2018.

Marina del Rey Enhanced Watershed Management Group (2019). Los Angeles County Municipal Storm Water Permit (Order No. R4-2012-0175 as amended by State Board Order WQ 2015-0075) NPDES No. CAS004001 Annual Report 2018-2019.

Marina del Rey Enhanced Watershed Management Program Agencies (2018). Marina del Rey Enhanced Watershed Management Program (EWMP)

McGowan Consulting, LLC. (2020, January 31). Comments on the Staff Working Proposal of the Regional Phase I MS4 Permit [Letter].

McKinsey & Company (2020). Analysis of Covid-19 Economic Impact: Southern California.

Monitoring Plan Subcommittee Chaired by City of Los Angeles (2009). Ballona Creek Metals and Toxics TMDL Coordinated Monitoring Plan.

National Association for Business Economics (2020). Economic Policy Survey.

North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Group (2016). North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program.

North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Group (2016). North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Annual Report 2015-2016.

North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Group (2017). North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Annual Report 2016-2017.

North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Group (2018). North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Annual Report 2017-2018

North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Group (2019). North Santa Monica Bay Coastal Watersheds Enhanced Watershed Management Program Annual Report 2018-2019.

.

Palos Verdes Peninsula Watershed Management Group (2019). Palos Verdes Peninsula Enhanced Watershed Management Program

Parolin, Zachary, Megan A. Curran, and Christopher Wimer (2020). The CARES Act and Poverty in the COVID-19 Crisis. Poverty and Social Policy Brief Vol. 4 No. 8. Columbia University Center on Poverty and Social Policy.

Roosevelt, Margot (2020). California's economic recovery will be like a slow 'Nike swoosh. Los Angeles Times.

Roosevelt, Margot (2020). Think California is bouncing back? Recovery will take more than two years, economists say. Los Angeles Times.

Safe Clean Water LA (2020). Estimated Annual Municipal Program Funds by Municipality.

Safe Clean Water LA (2020). Estimated Annual Regional Program Funds by Watershed Area.

San Gabriel Valley Council of Governments. (2020, February 24). Comments on the Working Proposal of the Regional Phase I Municipal Separate Storm Sewer System (MS4) Permit (Order R4-2020-XXXX) [Letter].

Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Group (2018). Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program

Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Group (2017). Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Annual Report 2016-2017.

Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Group (2018). Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Annual Report 2017-2018

Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Group (2019). Santa Monica Bay Jurisdictional Group 2 and 3 Enhanced Watershed Management Program Annual Report 2018-2019

Smialek, Jeanna (2020). Fed Chair Powell Warns Pandemic Downturn Could Widen Inequalities. New York Times.

Southern California Association of Governments (2020). Potential Economic Impacts of COVID-19 in the SCAG Region.

Thomson-DeVeaux, Amelia and Neil Paine (2020). Even With a Vaccine, the Economy Could Take Many Months to Return to Normal. FiveThirtyEight.

UCLA Anderson Forecast (2020). September 2020 Economic Outlook – Forecast for California. Video Presentation.

Upper Los Angeles River Watershed Management Group except for the City of Rosemead. (2020, February 11). Preliminary Comments on Staff Working Proposal of the Regional Phase I MS4 Permit from the Upper Los Angeles River Watershed Management Group [Letter].

U.S. Department of Labor, Bureau of Labor Statistics (2020). The Employment Situation – October 2020.

U.S. Department of Labor, Bureau of Labor Statistics (2020). Unemployment Rates for States.

U.S. Environmental Protection Agency (1991). Guidance for Water Quality-based Decisions: the TMDL Process. Office of Water. EPA 440/4-91-001. April 1991.

U.S. Environmental Protection Agency (2000). Guidance for Developing TMDLs in California. EPA Region 9. January 7, 2000.

Ventura Countywide Stormwater Quality Management Program (2016). Ventura Countywide Municipal Stormwater Resource Plan.

Ventura County Stormwater Quality Management Program Group. (2020, August 21). TMDL Modification Request [Letter].

Ventura Countywide Stormwater Quality Management Program Group (2017). Ventura Countywide Stormwater Quality Management Program Annual Report 2016-2017.

Ventura Countywide Stormwater Quality Management Program Group (2018). Ventura Countywide Stormwater Quality Management Program Annual Report 2017-2018.

Ventura Countywide Stormwater Quality Management Program Group (2019). Ventura Countywide Stormwater Quality Management Program Annual Report 2018-2019.

Yelp (2020). Yelp: Local Economic Impact Report.

H. Appendix

Table A.1 Ballona Creek Years to Compliance Based on Expected Measure W Revenue ($ Millions, 2019$)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[5]
			Municipal[2]	Regional[3]	Additional[4]	Total			
Beverly Hills	$76.40	$71.36	$0.55	$0.67	$0.00	$1.22	$1.25	$2.47	28.9
County of Los Angeles	$89.12	$83.24	$0.23	$0.30	$0.24	$0.78	$0.80	$1.57	53.0
Culver City	$146.31	$136.66	$0.53	$0.65	$1.97	$3.16	$3.25	$6.41	21.3
Inglewood	$70.62	$65.96	$0.30	$0.37	$0.00	$0.67	$0.69	$1.35	48.7
Los Angeles	$2,422.98	$2,263.06	$7.57	$9.22	$0.00	$16.79	$17.25	$34.04	66.5
Santa Monica	$18.43	$17.22	$0.04	$0.05	$0.19	$0.28	$0.29	$0.57	30.1
West Hollywood	$68.23	$63.73	$0.26	$0.33	$0.00	$0.59	$0.60	$1.19	53.6
Total	**$2,892.11**	**$2,701.23**	**$9.48**	**$11.58**	**$2.41**	**$23.48**	**$24.12**	**$47.60**	**56.7**

[1] Capital costs were derived from EWMP which addresses the controlling pollutant.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Additional city funds specific to stormwater.

[5] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the Ballona Creek EWMP municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.

Table A.2 Marina del Rey Years to Compliance Based on Expected Measure W Revenue ($ Millions, 2019$)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[4]
			Municipal[2]	Regional[3]	Additional	Total			
County of Los Angeles	$93.78	$91.22	$0.01	$0.04	$0.00	$0.05	$0.05	$0.11	845.1
City of Los Angeles	$267.19	$259.91	$0.10	$0.13	$0.00	$0.23	$0.24	$0.47	557.3
City of Culver City	$7.15	$6.96	$0.00	$0.01	$0.00	$0.01	$0.01	$0.03	275.0
Total	**$368.12**	**$358.09**	**$0.11**	**$0.18**	**$0.00**	**$0.30**	**$0.30**	**$0.60**	**597.2**

[1] Capital costs include only structural BMPs and were derived from EWMP which addresses the controlling pollutant.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.

Table A.3 Malibu Creek Years to Compliance Based on Expected Measure W Revenue ($ Millions, 2019$)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[4]
			Municipal[2]	Regional[3]	Additional	Total			
County of Los Angeles	$44.05	$42.91	$1.55	$0.32	$0.00	$1.87	$1.93	$3.80	11.3
Agoura Hills	$86.72	$84.46	$0.24	$0.32	$0.00	$0.56	$0.58	$1.14	74.1
Calabasas	$37.50	$36.53	$0.15	$0.14	$0.00	$0.30	$0.31	$0.60	60.7
Hidden Hills	$0.81	$0.79	$0.01	$0.01	$0.00	$0.02	$0.02	$0.03	24.9
Westlake Village	$32.45	$31.61	$0.16	$0.22	$0.00	$0.38	$0.39	$0.77	41.1
Total	**$201.54**	**$196.30**	**$2.11**	**$1.01**	**$0.00**	**$3.12**	**$3.22**	**$6.34**	**31.0**

[1] Capital costs were derived from EWMP which addresses the controlling pollutant.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.

Table A.4 North Santa Monica Bay Years to Compliance Based on Expected Measure W Revenue ($ Millions, 2019$)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[4]
			Municipal[2]	Regional[3]	Additional	Total			
County of Los Angeles	$21.77	$11.10	$0.57	$0.12	$0.00	$0.69	$0.71	$1.40	7.9
City of Malibu	$12.74	$6.50	$0.27	$0.40	$0.00	$0.67	$0.69	$1.36	4.8
Total	**$34.51**	**$17.60**	**$0.84**	**$0.52**	**$0.00**	**$1.36**	**$1.40**	**$2.76**	**6.4**

[1] Capital costs were derived from EWMP which addresses the controlling pollutant.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.

Table A.5 JG2&3 Years to Compliance Based on Expected Measure W Revenue ($ Millions, 2019$)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[4]
			Municipal[2]	Regional[3]	Additional	Total			
County of Los Angeles	$6.00	$5.28	$0.01	$0.03	$0.00	$0.03	$0.04	$0.07	74.7
City of Los Angeles	$417.26	$367.19	$2.37	$3.28	$0.00	$5.65	$5.82	$11.48	32.0
El Segundo	$21.16	$18.62	$0.39	$0.62	$0.00	$1.01	$1.04	$2.06	9.0
Santa Monica	$216.92	$190.89	$0.54	$0.82	$0.00	$1.36	$1.41	$2.77	68.9
Total	**$661.35**	**$581.98**	**$3.31**	**$4.76**	**$0.00**	**$8.07**	**$8.31**	**$16.38**	**35.5**

[1] Capital costs were derived from EWMP which addresses the controlling pollutant.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.

Table A.6 Beach Cities Years to Compliance Based on Expected Measure W Revenue ($ Millions)

Municipality	Original Capital Costs[1]	Remaining Capital Costs	Expected Revenue Generation from Measure W				Matched Funding	Total Funding	Years to Compliance[4]
			Municipal[2]	Regional[3]	Additional	Total			
Manhattan Beach	$16.09	$13.08	$0.24	$0.37	$0.00	$0.62	$0.63	$1.25	10.5
Hermosa Beach	$30.61	$24.88	$0.11	$0.16	$0.00	$0.27	$0.28	$0.56	44.6
Redondo Beach	$6.54	$5.32	$0.35	$0.53	$0.00	$0.87	$0.90	$1.77	3.0
Total	**$53.24**	**$43.29**	**$0.70**	**$1.06**	**$0.00**	**$1.76**	**$1.82**	**$3.58**	**12.1**

[1] Capital costs were derived from EWMP which addresses the controlling pollutant. Capital costs presented are high estimates and include only costs for the Santa Monica Bay subwatershed and not the Dominguez Channel subwatershed.

[2] Assumes distribution of municipal funds are based on the percentage of municipality in the watershed and $285M/year Measure W total revenues.

[3] Assumes distribution of regional funds are based on the percentage of municipality in the Watershed Area and percentage in the watershed and $285M/year Measure W total revenues.

[4] Assumes $285M/year of Measure W revenues and all Measure W revenues directed to the municipalities are used solely for capital costs. While this is an unlikely scenario the assumption was made to simplify the initial analysis.