

TENTATIVE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

RESOLUTION NO. R9-2008-0027

A RESOLUTION TO ADOPT AN AMENDMENT TO THE *WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9)* TO INCORPORATE TOTAL MAXIMUM DAILY LOADS FOR INDICATOR BACTERIA, BABY BEACH IN DANA POINT HARBOR AND SHELTER ISLAND SHORELINE PARK IN SAN DIEGO BAY

WHEREAS, the California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds that:

1. **Basin Plan Amendment:** Total Maximum Daily Loads (TMDLs) and allocations for pollutants that exceed water quality objectives in waterbodies that do not meet water quality standards under the conditions set forth in section 303(d) of the Clean Water Act [U.S. Code Title 33 section 1250, *et seq.*, at 1313(d)] (“Water Quality Limited Segments”) should be incorporated into the *Water Quality Control Plan for the San Diego Basin (9)* (Basin Plan) pursuant to Article 3, commencing with section 13240, of Chapter 4 of the Porter-Cologne Water Quality Control Act, as amended, codified in Division 7, commencing with section 13000, of the Water Code.
2. **Clean Water Act Section 303(d):** As required by section 303(d) of the Clean Water Act, specific segments of San Diego Bay and Dana Point Harbor in the San Diego Region were placed on the List of Water Quality Limited Segments because levels of total coliform, fecal coliform, and/or *Enterococcus* at those locations exceeded water quality objectives for water-contact recreation (REC-1)¹ beneficial use. (Measurements of total coliform, fecal coliform, and *Enterococcus* are relied on to indicate the presence of disease-causing pathogens.) The shoreline segments of San Diego Bay and Dana Point Harbor for which water quality is impaired by bacterial pollution, and for which TMDLs have been calculated, are shown below.

Waterbody	Segment / Area	Hydrologic Descriptor	Pollutant / Stressor	Extent of Impairment	Year Listed
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	Indicator bacteria	0.4 miles	2002
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	Indicator bacteria	0.4 miles	2002

¹ The Basin Plan also contains shellfish harvesting (SHELL) beneficial use water quality objectives for total coliform. SHELL impairments for total coliform will be addressed in a separate TMDL and/or standards action.

3. **Water Quality Impairments:** The REC-1 beneficial use is particularly sensitive to, and subject to impairment by, pathogens when elevated densities of indicator bacteria exist in the water.² Persons who ingest water during recreational activities in waters containing indicator bacteria at densities in excess of water quality objectives for REC-1, are significantly more likely to incur infections or illness caused by pathogens in the water than when indicator bacteria occur at densities consistent with the applicable water quality objectives. REC-1 is a beneficial use of the shorelines of San Diego Bay and Dana Point Harbor where water quality is listed as impaired.
4. **Necessity Standard** [Government Code section 11353(b)]: Amendment of the Basin Plan to establish and implement Total Maximum Daily Loads (TMDLs) for the waters along the impaired shoreline segments of San Diego Bay and Dana Point Harbor is necessary because the existing water quality at the shoreline segments listed in Attachment A does not meet applicable water quality objectives for total coliform, fecal coliform, and/or *Enterococcus* bacteria. Clean Water Act section 303(d) requires the establishment and implementation of TMDLs under the water quality conditions that exist at these shoreline segments. TMDLs for total coliform, fecal coliform, and/or *Enterococcus* bacteria are necessary to promote attainment of applicable water quality objectives and restoration of water quality needed to support the beneficial uses designated for the shorelines of San Diego Bay and Dana Point Harbor.
5. **Water Quality Objectives:** Water quality objectives for bacteria the coastal waters of the Baby Beach and Shelter Island Shoreline Park shorelines, expressed as the most probable number of bacteria colonies per 100 mL of water sample (MPN/100 mL), are contained in the Basin Plan.

The water quality objectives for indicator bacteria in inland surface waters and enclosed bays and estuaries designated as having the REC-1 beneficial use include:

- i. **Total Coliform (Bays and Estuaries):** Total coliform bacteria density shall be less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml) and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 (100 per ml).
- ii. **Fecal Coliform (Marine Waters):** Based on a minimum of not less than five samples for any 30-day period, fecal coliform bacteria density shall not exceed a log mean of 200 per 100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 400 per 100 ml.
- iii. ***Enterococcus* (Marine Waters):** The geometric mean of *Enterococcus* bacteria shall not exceed 35 colonies per 100 ml. The single sample maximum allowable density in designated beach areas is 104 colonies per 100 ml, in

² Water quality objectives for indicator bacteria in waters with non-water-contact recreation (REC-2) are less stringent than the water quality objectives for REC-1, therefore, attainment of REC-1 objectives through the implementation of TMDLs will, *a fortiori*, provide the requisite water quality for REC-2.

moderately or lightly used areas is 276 colonies per 100 ml, in infrequently used areas is 500 colonies per 100 ml.

6. **Numeric Targets:** Numeric Targets are established for the purposes of calculating TMDLs. The numeric targets for these TMDLs consist of the REC-1 water quality objectives for indicator bacteria contained in the Basin Plan. Since numeric targets are equal to the water quality objectives for total coliform, fecal coliform, and enterococci bacteria cited in finding 5, attainment of TMDLs will ensure attainment of these water quality objectives.
7. **Sources of Bacteria:** Sources of bacteria are the same under both wet weather and dry weather conditions. Bacteria can enter surface waters from both nonpoint and point sources. Nonpoint sources are typically diffuse sources that have multiple routes of entry into surface waters. Point sources typically discharge at a specific location from pipes, outfalls, and conveyance channels. The only nonpoint sources identified were natural or background sources, such as direct inputs from birds, terrestrial and aquatic animals, or other unidentified sources within the receiving waters. The only point source identified was discharges from municipal separate storm sewer systems (MS4s), although other point sources may exist. For both wet weather and dry weather conditions, there are natural and background sources of bacteria within the receiving waters at the impaired shoreline segments. These nonpoint sources of bacteria are generally considered uncontrollable. However, for sources of bacteria that originate from the watersheds draining into the receiving waters, which are located entirely within urbanized areas, the method of transport for the two conditions is very different. Wet weather loading originating from the watersheds is dominated by episodic storm flows that wash off bacteria that build up on the surface of all land use types in a watershed during dry periods. Dry weather loading originating from the watersheds is dominated by nuisance flows from urban land use activities such as car washing, sidewalk washing, and lawn over-irrigation, which pick up bacteria and deposit it into receiving waters. Because the watersheds draining into the receiving waters are located entirely within urbanized areas, and therefore surface runoff is collected and discharged from MS4s, the watershed sources of bacteria are controllable.
8. **Water Quality Objective Violations:** Bacteria densities at the impaired shoreline segments of Baby Beach and Shelter Island Shoreline Park have frequently exceeded water quality objectives.
9. **Relationship Between Bacteria and Pathogens:** Fecal indicator bacteria originate from the intestinal biota of warm-blooded animals, including humans, and their presence in surface water is used as an indicator of the possible presence of human pathogens (*i.e.*, organisms that can cause illness in people exposed through recreational water use and people who harvest and eat filter-feeding shellfish; pathogens include protozoans, bacteria, viruses, and other disease-causing organisms). Bacteria have been historically used as indicators of human pathogens because the probability of disease is directly correlated with the density of indicator bacteria in waters used for recreation and because the indicator bacteria are easier and less costly to measure than the pathogens themselves. If TMDLs for indicator

bacteria are attained, then water quality objectives are met, and health risks associated with pathogens are minimal.

10. **Total Maximum Daily Loads** [Code of Federal Regulations Title 40 section 130.2(i)]: TMDLs for bacteria are equal to the total assimilative or loading capacities of the receiving waters along the shorelines of Baby Beach and Shelter Island Shoreline Park for total coliform, fecal coliform, and *Enterococcus* bacteria. The loading capacities are defined as the maximum amount of fecal coliform, total coliform and *Enterococcus* that the waterbody can receive and still attain water quality objectives necessary for the protection of designated beneficial uses. Each TMDL must accommodate all known sources of a pollutant, whether from natural background, nonpoint sources, or point sources, and must include a margin of safety (MOS) to preclude pollutant loading from exceeding the actual assimilative capacities of the waterbodies. The TMDL calculations also account for seasonal variations and critical conditions and were developed in a manner consistent with guidelines published by USEPA.
11. **Allocations and Reductions**: Discharges of bacteria from all identified sources that are susceptible to control or management must be reduced in order to keep total bacterial loads as close to the TMDLs and actual assimilative capacities of the impaired waters as possible. Discharges from controllable sources were identified as originating from MS4s for urbanized sources. Controllable sources must be reduced by an amount in proportion to the existing loads generated in each watershed, as calculated using a computer model. TMDLs are reported on a watershed basis and must be jointly achieved by all dischargers of bacteria located in the watersheds. Natural sources of bacteria are considered uncontrollable and no load reductions are necessary.
12. **Implementation Plan**: The report entitled *Total Maximum Daily Loads for Indicator Bacteria, Baby Beach and Shelter Island Shoreline Park Shorelines*, (Technical Report) dated **Month Day, 2008** presents a summary of measures that, if adopted by the San Diego Water Board, the State Water Resources Control Board (State Water Board), and local governmental agencies, will promote attainment of the load reductions needed to keep discharges of bacteria at or below the TMDLs calculated for these waterbodies. Section 303 of the CWA and the federal NPDES regulations direct USEPA and authorized states to impose requirements consistent with TMDLs for point source discharges to "impaired" waterbodies. When the San Diego Water Board and State Water Board re-issue or revise National Pollutant Discharge Elimination System (NPDES) requirements for municipal storm water discharges, they will have to include requirements that will implement all TMDLs applicable to waters affected by the regulated discharges.
13. **Compliance Monitoring**: Monitoring including pollutant load reductions, changes in urban runoff and discharge water quality, and changes in receiving water quality will be necessary to assess effectiveness in achieving load and wasteload allocations and compliance with the water quality objectives for total coliform, fecal coliform, and *Enterococcus* bacteria.

14. **Scientific Peer Review:** The scientific basis for these TMDLs has undergone external peer review pursuant to Health and Safety Code section 57004. The San Diego Water Board has considered and responded to all comments submitted by the peer review panel, and has enhanced the Technical Report appropriately. No change to the fundamental approach to TMDL calculation was necessary as a result of this process.
15. **CEQA Requirements:** Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) [Public Resources Code section 21000 et seq.] requirements for preparing environmental documents [California Code of Regulations Title 14 section 15251(g); California Code of Regulations Title 23 section 3782]. As such, the documents supporting the San Diego Water Board's proposed basin planning action contain the required environmental documentation under CEQA and serve as "substitute documents" [California Code of Regulations Title 23 section 3777]. The substitute documents for this project include the environmental checklist, the detailed Technical Report, responses to comments submitted during the public participation phase in the development of the TMDLs, and this resolution. The project itself is the establishment of TMDLs for indicator bacteria for the shoreline segments of San Diego Bay and Dana Point Harbor where water quality has been listed as "impaired" by the State Water Board pursuant to section 303(d) of the Clean Water Act, as required by that section. While the San Diego Water Board has no discretion to not establish the TMDLs (the TMDLs are required by federal law), the Board does exercise discretion in assigning wasteload allocations and load allocations, determining the program of implementation, and setting various milestones in achieving the applicable water quality objectives at the affected beaches and creeks.
16. **Project Impacts:** The accompanying CEQA substitute documents satisfy the requirements of substitute documents for a Tier 1 environmental review under CEQA, pursuant to Public Resources Code section 21159 and California Code of Regulations Title 14 section 15187. Nearly all of the compliance obligations anticipated to be necessary to implement the TMDLs for indicator bacteria will be undertaken by public agencies that will have their own obligations under CEQA for implementation projects that could have significant environmental impacts (e.g., installation and operation of structural best management practices). Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies pursuant to Public Resources Code section 21159.2.

If not properly mitigated at the project level, implementation and compliance measures undertaken could have significant adverse environmental impacts. The substitute documents for this TMDL, and in particular the environmental checklist and responses to comments, identify broad mitigation approaches that should be considered at the project level. The San Diego Water Board does not engage in speculation or conjecture regarding the projects that may be used to implement the TMDLs and only considers the reasonably foreseeable alternative methods of

compliance, the reasonably foreseeable feasible environmental impacts of the these methods of compliance, and the reasonably foreseeable mitigation measures which would avoid or eliminate the identified impacts, all from a broad general perspective consistent with the uncertainty regarding how the TMDLs, ultimately, will be implemented. The lengthy implementation period allowed by the TMDLs will allow persons responsible for compliance with wasteload allocations to develop and pursue many compliance approaches and mitigation measures.

17. **Project Mitigation:** The proposed amendment to the Basin Plan to establish TMDLs for indicator bacteria in the receiving waters at the shoreline segments of San Diego Bay and Dana Point Harbor could have a significant adverse effect on the environment. However, there are feasible alternatives, feasible mitigation measures, or both, that would substantially lessen any significant adverse impact. The public agencies responsible for implementation measures needed to comply with the TMDLs can and should incorporate such alternatives and mitigation into any projects or project approvals that they undertake for the impaired beaches and creeks. Possible alternatives and mitigation are described in the CEQA substitute documents, specifically the Technical Report and the environmental checklist. To the extent the alternatives, mitigation measures, or both, are not deemed feasible by those agencies, the necessity of implementing the TMDLs that is mandated by the federal Clean Water Act and removing the bacteria impairments within waterbodies in the San Diego Region (an action required to achieve the express, national policy of the Clean Water Act) outweigh the unavoidable adverse environmental effects identified in the substitute documents.
18. **Department of Fish and Game Filing Fee:** Considering the record as a whole, this Basin Plan amendment will result in no effect, either individually or cumulatively, on wildlife resources.
19. **Economic Analysis:** The San Diego Water Board has considered the costs of the reasonably foreseeable methods of compliance with the load and wasteload allocations specified in these TMDLs. The most reasonably foreseeable methods of compliance involve implementation of structural and non-structural controls. Surface water monitoring to evaluate the effectiveness of these controls will be necessary
20. **Stakeholder and Public Participation:** Interested persons and the public have had reasonable opportunity to participate in review of the proposed TMDLs. Efforts to solicit public review and comment included a public workshop and CEQA scoping meeting in March 2003, a public workshop in March 2004, three meetings with the Stakeholder Advisory Group, a public review and comment period consisting of XX days, and a public hearing on Month Day, 2008. Notices for all meetings were sent to interested parties including cities and counties with jurisdiction in watersheds draining to the bacteria impaired shoreline segments. All of the written comments submitted to the San Diego Water Board during the review and comment periods have been considered in Appendix XX to the Technical Report.

21. **Public Notice:** The San Diego Water Board has notified all known interested parties and the public of its intent to consider adoption of this Basin Plan amendment in accordance with Water Code section 13244.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. **Environmental Documents Certification:** The substitute environmental documents prepared pursuant to Public Resources Code section 21080.5 are hereby certified, and the Executive Officer is directed to file a Notice of Decision with the Resources Agency after State Water Board and Office of Administrative Law (OAL) approval of the Basin Plan Amendment, in accordance with section 21080.5(d)(2)(E) of the Public Resources Code and the California Code of Regulations Title 23 section 3781.
2. **Amendment Adoption:** The San Diego Water Board hereby adopts the attached Basin Plan amendment as set forth in Attachment A hereto to establish TMDLs for indicator bacteria at Baby Beach and Shelter Island Shoreline Park.
3. **Technical Report Approval:** The San Diego Water Board hereby approves the Technical Report entitled *Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay*, dated **Month Day, 2008**.
4. **Certificate Of Fee Exemption:** The Executive Officer is authorized to sign a Certificate of Fee Exemption for a “no” impact finding and shall submit this Certificate *in lieu* of payment of the California Department of Fish and Game filing fee.
5. **Agency Approvals:** The Executive Officer is directed to submit this Basin Plan amendment to the State Water Board in accordance with Water Code section 13245.
6. **Non-Substantive Corrections:** If, during the approval process for this amendment, the San Diego Water Board, the State Water Board, or the OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the San Diego Water Board of any such changes.

*I, John H. Robertus, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the California Regional Water Quality Control Board, San Diego Region, on **Month Day, 2008**.*

JOHN H. ROBERTUS
Executive Officer

**ATTACHMENT A
TO RESOLUTION NO. R9-2008-0027**

**AMENDMENT TO THE WATER QUALITY
CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE
TOTAL MAXIMUM DAILY LOADS FOR INDICATOR BACTERIA,
BABY BEACH IN DANA POINT HARBOR AND
SHELTER ISLAND SHORELINE PARK IN
SAN DIEGO BAY**

This Basin Plan amendment establishes Total Maximum Daily Loads (TMDLs) and associated load and wasteload allocations for total coliform, fecal coliform, and *Enterococcus* bacteria along the shorelines of Baby Beach, located within Dana Point Harbor, and Shelter Island Shoreline Park, located within San Diego Bay. This amendment includes a program to implement the TMDLs and monitor their effectiveness. Chapters 2, 3, and 4 of the Basin Plan are amended as follows:

CHAPTER 2. BENEFICIAL USES.

Table 2-3. BENEFICIAL USES OF COASTAL WATERS.

Consecutively number and add the following footnote to Dana Point Harbor in Table 2-3:

The shoreline segment along Baby Beach within Dana Point Harbor is designated as a water quality limited segment for indicator bacteria pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapter 4, *Implementation, Clean Water Act Section 303(d) Requirements for Impaired Waterbodies, Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.*

Consecutively number and add the following footnote to San Diego Bay in Table 2-3:

The shoreline segment along Shelter Island Shoreline Park within San Diego Bay is designated as a water quality limited segment for indicator bacteria pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapter 4, *Implementation, Clean Water Act Section 303(d) Requirements for Impaired Waterbodies, Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.*

Renumber any footnotes in Table 2-3 displaced by these new footnotes.

CHAPTER 3. WATER QUALITY OBJECTIVES.**OCEAN WATERS.****OCEAN PLAN AND THERMAL PLAN.*****Ocean Plan and Thermal Plan Water Quality Objective.***

Add the following paragraph to the end of the introductory text:

The shoreline segment along Baby Beach within Dana Point Harbor is designated as a water quality limited segment for indicator bacteria pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapter 2, Table 2-3, *Beneficial Uses of Coastal Waters*, Footnote [insert footnote number], and Chapter 4, *Implementation, Clean Water Act Section 303(d) Requirements for Impaired Waterbodies, Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.*

**INLAND SURFACE WATERS, ENCLOSED BAYS AND ESTUARIES, COASTAL LAGOONS, AND GROUND WATERS.
BACTERIA – TOTAL AND FECAL COLIFORM.**

Add the following paragraph to the end of the introductory text:

The shoreline segment along Shelter Island Shoreline Park within San Diego Bay is designated as a water quality limited segment for indicator bacteria pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapter 2, Table 2-3, *Beneficial Uses of Coastal Waters*, Footnote [insert footnote number], and Chapter 4, *Implementation, Clean Water Act Section 303(d) Requirements for Impaired Waterbodies, Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.*

**INLAND SURFACE WATERS, ENCLOSED BAYS AND ESTUARIES, COASTAL LAGOONS, AND GROUND WATERS.
BACTERIA – E. COLI AND ENTEROCOCCI.**

(2) Waters Designated for Contact Recreation (REC-1) Beneficial Use

Add the following paragraph to the end of the introductory text:

The shoreline segment along Shelter Island Shoreline Park within San Diego Bay is designated as a water quality limited segment for indicator bacteria pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapter 2, Table 2-3, *Beneficial Uses of Coastal Waters*, Footnote [insert footnote number], and Chapter 4, *Implementation, Clean Water Act Section 303(d) Requirements for Impaired Waterbodies, Total Maximum*

Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.

CHAPTER 4. IMPLEMENTATION.

Amend the Table of Contents to Chapter 4 to include the subsection added below.

Consecutively number and renumber footnotes appropriately.

Add the following subsection after the most recently adopted and approved TMDL subsection and before the Other Programs subsection:

TOTAL MAXIMUM DAILY LOADS FOR INDICATOR BACTERIA, BABY BEACH AND SHELTER ISLAND SHORELINE PARK SHORELINES

On [Insert date], the San Diego Water Board adopted Resolution No. R9-2008-0027, *A Resolution Amending the Water Quality Control Plan for the San Diego Region (9) to Incorporate Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay.* The TMDL Basin Plan Amendment was subsequently approved by the State Water Resources Control Board on [Insert date], the Office of Administrative Law on [Insert date], and the USEPA on [Insert date].

PROBLEM STATEMENT

Bacteria densities along the shoreline segments of Baby Beach within Dana Point Harbor and Shelter Island Shoreline Park within San Diego Bay violate water quality objectives (WQOs) for indicator bacteria. Bacteria densities in waters at these shoreline segments unreasonably impair and threaten to impair the water quality needed to support designated beneficial uses of contact recreation (REC-1)³.

The federal Clean Water Act requires the establishment of Total Maximum Daily Loads (TMDLs) for pollutants that exceed water quality objectives needed to support designated beneficial uses, *i.e.*, that cause or contribute to violation of state “water quality standards.”

NUMERIC TARGETS

When calculating TMDLs, numeric targets are established to meet WQOs and subsequently ensure the protection of beneficial uses. The numeric targets for these TMDLs consist of the REC-1 WQOs for indicator bacteria contained in the Ocean

³ Water quality objectives for indicator bacteria in waters with non-water-contact recreation (REC-2) are less stringent than the water quality objectives for REC-1, therefore, attainment of REC-1 objectives through the implementation of TMDLs will, *a fortiori*, provide the requisite water quality for REC-2.

Plan and Basin Plan. TMDLs were calculated for each impaired waterbody, for each indicator bacteria, for wet and dry weather. The numeric targets used in the TMDL calculations were equal to the WQOs for bacteria for REC-1.

Different dry weather and wet weather numeric targets were used for load calculations because the bacteria transport mechanisms to receiving waters are different under wet and dry weather conditions.

Single sample maximum WQOs were used as wet weather numeric targets. Dry weather numeric targets are typically best represented by geometric mean WQOs. However, due to extreme diurnal variations in bacteria densities that can result from tidal effects, in some cases the maximum hourly concentration could regularly exceed the single sample maximum WQOs. Therefore, both the REC-1 30-day geometric mean and single sample maximum WQOs were selected as numeric targets for dry weather. The numeric targets were equal to the total coliform, fecal coliform and *Enterococcus* WQOs for REC-1 in all cases.

The numeric targets for the scenarios described above are listed in the following tables:

Table [Insert Table Number]. Wet Weather Numeric Targets

Basis for Numeric Target	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	<i>Enterococcus</i> (MPN/100mL)
Beneficial Use	REC-1	REC-1	REC-1
Single sample maximum	10,000	400	104

Table [Insert Table Number]. Dry Weather Numeric Targets

Basis for Numeric Target	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	<i>Enterococcus</i> (MPN/100mL)
Beneficial Use	REC-1	REC-1	REC-1
30-day geometric mean	1,000	200	35
Single sample maximum	10,000	400	104

SOURCE ANALYSIS

Sources of bacteria are the same under both wet weather and dry weather conditions. Bacteria can enter surface waters from both nonpoint and point sources. Nonpoint sources are typically diffuse sources that have multiple routes of entry into surface waters. Point sources typically discharge at a specific location from pipes, outfalls, and conveyance channels. The only nonpoint sources identified were natural or background sources, such as direct inputs from birds, terrestrial and aquatic animals, or other unidentified sources within the receiving waters. The watersheds that drain into the receiving waters at the impaired shoreline segments are wholly located within urbanized areas. Therefore, the only point source

identified was urban runoff discharged from municipal separate storm sewer systems (MS4s), although other point sources may exist.

For both wet weather and dry weather conditions, there are natural and background sources of bacteria within the receiving waters at the impaired shoreline segments. However, for sources of bacteria that originate from the watersheds draining into the receiving waters, the method of transport for the two conditions is very different. Wet weather loading originating from the watersheds is dominated by episodic storm flows that wash off bacteria that build up on the surface of all land use types in the watershed during dry periods. Dry weather loading originating from the watersheds is dominated by nuisance flows from urban land use activities such as car washing, sidewalk washing, and lawn over-irrigation, which pick up bacteria and deposit it into receiving waters.

TOTAL MAXIMUM DAILY LOADS AND ALLOCATIONS

The TMDLs are equal to the assimilative or loading capacity of each shoreline segment for each pollutant. TMDLs for each type of indicator bacteria were developed for each impaired waterbody. TMDLs are defined as the maximum amount of a pollutant the waterbody can receive and still attain water quality objectives and protection of designated beneficial uses. Once calculated, a TMDL is set equal to the sum of all individual Waste Load Allocations (WLAs) for point sources and Load Allocations (LAs) for nonpoint sources. The TMDL includes a margin of safety (MOS) that takes into account any uncertainties in the TMDL calculation, which may be explicit or implicit. For these TMDLs, an implicit margin of safety is included via conservative estimates and assumptions used throughout the TMDL calculations. Separate TMDLs were calculated for wet weather and dry weather conditions to account for seasonal variations, and because the transport mechanism, flow, and bacteria loads from the watersheds draining to the receiving waters are different between dry and wet weather conditions.

Calibrated models were used to simulate flow and bacteria densities from the watersheds draining into the receiving waters and within the receiving waters of the shoreline segments. The models were used to calculate the existing bacteria loads, as well as TMDLs for each impaired shoreline segment. The modeled existing loads were compared to the TMDLs to calculate the necessary load reductions needed to achieve the TMDLs in the waterbodies. The TMDLs were allocated among point sources (WLAs) and nonpoint sources (LAs). The only point source identified was urban runoff discharged from MS4s, which was assigned a WLA for each watershed. The only nonpoint sources identified were natural or background sources, such as direct inputs from birds, terrestrial and aquatic animals, or other unidentified sources within the receiving waters, which were lumped together and assigned a LA. Because only the point sources are considered controllable, a load reduction was only calculated for the bacteria loads from the MS4s. The TMDLs, LAs for natural and background sources, WLAs for municipal MS4s, and load reductions for municipal MS4s are shown below in Tables [Insert table numbers].

MARGIN OF SAFETY

There are two ways to incorporate the MOS ([USEPA, 1991](#)): (1) implicitly incorporate the MOS using conservative model assumptions to develop allocations; and/or, (2) explicitly specify a portion of the total TMDL as the MOS and use the remainder for allocations. Throughout the TMDL development process, conservative assumptions were employed. Based on the incorporation of all these conservative assumptions, no explicit MOS was necessary.

Table [Insert table number]. REC-1 Wet Weather TMDLs for Total Coliform for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/ 30 days)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/ 30 days) ¹	Municipal MS4 (Billion MPN/ 30 days)	Municipal MS4 (Billion MPN/ 30 days)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	166,111	162,857	3,254	3,254	0%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	482,598	482,400	198	198	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis (Dry weather LA from Table 8-4 multiplied by 30 days). No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

Table [Insert table number]. REC-1 Wet Weather TMDLs for Fecal Coliform for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/ 30 days)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/ 30 days) ¹	Municipal MS4 (Billion MPN/ 30 days)	Municipal MS4 (Billion MPN/ 30 days)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	32,585	32,473	112	112	0%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	41,408	41,400	8	8	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis (Dry weather LA from Table 8-5 multiplied by 30 days). No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

Table [Insert table number]. REC-1 Wet Weather TMDLs for *Enterococcus* for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/ 30 days)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/ 30 days) ¹	Municipal MS4 (Billion MPN/ 30 days)	Municipal MS4 (Billion MPN/ 30 days)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	5,730	5,616	114	301	62.2%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	10,556	10,530	26	26	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis (Dry weather LA from Table 8-6 multiplied by 30 days). No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

Table [Insert table number]. REC-1 Dry Weather TMDLs for Total Coliform for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/ day)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/ day) ¹	Municipal MS4 (Billion MPN/ day)	Municipal MS4 (Billion MPN/ day)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	5,430	5,429	0.86	9.0	90.4%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	16,080	16,080	0	0	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis. No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

Table [Insert table number]. REC-1 Dry Weather TMDLs for Fecal Coliform for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/day)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/day) ¹	Municipal MS4 (Billion MPN/day)	Municipal MS4 (Billion MPN/day)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	1,083	1,082	0.17	1.0	82.7%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	1,380	1,380	0	0	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis. No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

Table [Insert table number]. REC-1 Dry Weather TMDLs for *Enterococcus* for Baby Beach and Shelter Island Shoreline Park Shoreline Segments

Waterbody	Shoreline Segment/Area	Hydrologic Descriptor	Model Sub-watershed	TMDL (Billion MPN/day)	Load Allocations (LAs)	Wasteload Allocations (WLAs)	Existing Wasteloads	Percent Reduction of Municipal MS4 Existing Wasteload ²
					Natural/Background (Billion MPN/day) ¹	Municipal MS4 (Billion MPN/day)	Municipal MS4 (Billion MPN/day)	
Dana Point Harbor	Baby Beach	Dana Point HSA (901.14)	2101,2102 2103,2104	187	187	0.03	0.8	96.2%
San Diego Bay	Shelter Island Shoreline Park	Point Loma HA (908.10)	2201	351	351	0	0	0%

Abbreviations/Acronyms:
 TMDL: total maximum daily load
 LA: load allocation for nonpoint source
 WLA: wasteload allocation for point source
 MS4: Municipal Separate Storm Sewer System
 MPN: most probable number

Notes:
¹ Calculated by dry weather EFDC model analysis. No reduction required for natural sources.
² Percent Reduction of Existing Municipal MS4 Wasteload = (Existing Municipal MS4 Wasteload – Municipal MS4 WLA) ÷ (Existing Municipal MS4 Wasteload) x 100%

TMDL IMPLEMENTATION PLAN

The necessary actions to implement the TMDLs are described in section 10 of the Technical Report entitled *Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay*, dated **Month Day, 2008**, and listed below.

(A) San Diego Water Board Actions

The TMDLs will be implemented primarily by reissuing or revising the existing NPDES requirements for MS4 discharges to include water quality based effluent limitations (WQBELs) that are consistent with the assumptions and requirements of the bacteria WLAs for MS4 discharges, though there may be other or new point sources.

(1) Process and Schedule for Issuing NPDES Requirements

NPDES requirements should be issued, reissued, or revised “as expeditiously as practicable” to incorporate WQBELs derived from the TMDL WLAs. “As expeditiously as practicable” means the following:

1. **New point sources.** “New” point sources previously unregulated by NPDES requirements must obtain their NPDES requirements before they can lawfully discharge pollutants. For point sources receiving NPDES requirements for the first time, “as expeditiously as practicable” means that the San Diego Water Board incorporates WQBELs that are consistent with the assumptions and requirements of the WLAs into the NPDES requirements and requires compliance with the WQBELs upon the commencement of the discharge.
2. **Point Sources Currently Regulated Under NPDES Requirements.** For point sources currently regulated under NPDES requirements, “as expeditiously as practicable” means that:
 - a. WQBELs that are consistent with the assumptions and requirements of the WLAs should be incorporated into NPDES requirements during their 5-year term, prior to expiration, in accordance with the applicable NPDES requirement reopening provisions, taking into account factors such as available NPDES resources, staff and budget constraints, and other competing priorities.
 - b. In the event the NPDES requirement revisions cannot be considered during the 5-year term, the San Diego Water Board will incorporate WQBELs that are consistent with the assumptions and requirements of the WLAs into the NPDES requirements at the end of the 5-year term.

(2) Actions with respect to Phase I Municipal Dischargers

The Phase I Municipal Dischargers in San Diego and Orange County are required under Receiving Water Limitations A.3.a.1 and C.2⁴ of Orders No. R9-2007-0001 and R9-2002-0001, respectively (San Diego County and Orange County MS4 NPDES requirements) to implement additional BMPs to reduce bacteria discharges in impaired watersheds to the maximum extent practicable and to restore compliance with the bacteria WQOs. This obligation is triggered when either the discharger or the San Diego Water Board determines that MS4 discharges are causing or contributing to an exceedance of an applicable WQO, in this case indicator bacteria WQOs. Designation of the shoreline segments in SDB and DPH as water quality limited segments under Clean Water Act section 303(d) provided sufficient evidence that that MS4 discharges are causing or contributing to the violation of water quality standards. Thus, the Municipal Dischargers should be implementing the provisions of Receiving Water Limitation C.2 with respect to bacteria discharges into water quality limited segments.

In addition to enforcing the provisions of Receiving Water Limitation C.2, the San Diego Water Board shall reissue or revise Orders No. R9-2007-0001 and R9-2002-0001, to incorporate WQBELs consistent with the assumptions and requirements of the bacteria WLAs, and requirements for monitoring and reporting. In those orders, the Phase I Municipal Dischargers are referred to as "Copermittees."⁵ WQBELs and other requirements implementing the TMDLs can be incorporated into these NPDES requirements upon the normal renewal cycle or sooner, if appropriate. The requirements implementing the TMDLs shall include the following:

- a. WQBELs consistent with the requirements and assumptions of the bacteria WLAs described in Tables 8-1 through 8-6 and a schedule of compliance applicable to the MS4 discharges into the impaired shoreline segments described in Table 10-3. At a minimum, WQBELs shall include a BMP program of expanded or better-tailored BMPs to attain the WLAs.

⁴ Receiving Water Limitations A.3.a.1 and C.2.a provide that "[u]pon a determination by either the Copermittee or the San Diego Water Board that MS4 discharges are causing or contributing to an exceedance of an applicable water quality standard, the Copermittee shall promptly notify and thereafter submit a report to the San Diego Water Board that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of water quality standards. The report may be incorporated in the annual update to the Jurisdictional URMP unless the San Diego Water Board directs an earlier submittal. The report shall include an implementation schedule. The San Diego Water Board may require modification to the report." Additional requirements are included in sections C.2.b-d.

⁵ Copermittees own or operate MS4s through which urban runoff discharges into waters of the U.S. within the San Diego Region. These MS4s fall into one or more of the following categories: (1) a medium or large MS4 that services a population of greater than 100,000 or 250,000 respectively; or (2) a small MS4 that is "interrelated" to a medium or large MS4; or (3) an MS4 which contributes to a violation of a water quality standard; or (4) an MS4 which is a significant contributor of pollutants to waters of the United States.

- b. If the WQBELs consist of BMP programs, then the reporting requirements shall consist of annual progress reports on BMP planning, implementation, and effectiveness in attaining the WQOs in impaired shoreline segments, and annual water quality monitoring reports. The first progress report shall consist of a Bacteria Load Reduction Plan (BLRP). BLRPs must be specific to each impaired waterbody.

To provide guidance to the dischargers in preparing BLRPs, the following bullets describe components that should be considered for incorporation in the BLRPs.

Bacteria Load Reduction Plans should include the following components:

Comprehensive Watershed Approach

- Dischargers should identify the Lead Watershed Contact for their BLRPs. The Lead Watershed Contact should serve as liaison between all other common watershed dischargers and the San Diego Water Board, where appropriate.
- Dischargers should describe a program for encouraging collaborative, watershed-based, land-use planning in their jurisdictional planning departments.
- Dischargers should develop and periodically update a map of the BLRP watershed, to facilitate planning, assessment, and collaborative decision-making. As appropriate, the map should include features such as receiving waters; Clean Water Act section 303(d) impaired receiving waters; water quality projects; land uses; MS4s; major highways; jurisdictional boundaries; and inventoried commercial, industrial, and municipal sites.
- Dischargers should annually assess the water quality of the impaired water body in their BLRPs in order to identify all water quality problems within the impaired water body. This assessment should use applicable water quality data, reports, and analysis generated in accordance with the requirements of the applicable NPDES MS4 monitoring and reporting programs, as well as applicable information available from other public and private organizations.
- Dischargers should develop and implement a collective watershed BLRP strategy to meet the bacteria TMDL. The strategy should guide dischargers in developing a Bacteria Compliance Schedule (BCS) which includes BMP planning and scheduling as outlined below.

- Dischargers should collaborate to develop and implement the BLRPs. The BLRP should include a proposal for frequent regularly scheduled meetings among the dischargers in the impaired watershed.
- Each BLRP and BCS should be reviewed annually to identify needed modifications and improvements. The dischargers should develop and implement a plan and schedule, included in the BCS, to address the identified modifications and improvements. All updates to the BLRP should be documented in the BLRP, and submitted to the San Diego Water Board. Individual dischargers should also review and modify their jurisdictional ordinances and activities as necessary so that they are consistent with the requirements of the BLRP.

Bacteria Compliance Schedule - BMP Planning and Scheduling

The BCS should identify the BMPs/water quality projects that are planned for implementation and provide an implementation schedule for each BMP/water quality project. The BCS should demonstrate how the BMPs/water quality projects will address all the bacteria TMDLs. The BCS, at a minimum, should include scheduling for the following:

Non-structural BMP phasing:

- Initial Non-Structural BMP Analysis - Watershed data should be analyzed to identify effective non-structural BMPs for implementation. This should be completed and included in the BCS.
- Scheduled Annual Non-structural BMP Implementation - The above analysis should be used to identify BMPs that will be implemented and to develop an aggressive non-structural BMP implementation schedule. The BCS should include a schedule of the current BMP staffing for each impaired area, and provide a discussion on adjustments to staff scheduling to meet new non-structural BMP demands. Schedules should be realistic and justifiable.
- Scheduled Annual BMP Assessment and Optimizing Adjustments - As the non-structural BMPs are being implemented, a scheduled in-depth assessment of the non-structural BMPs' performance should follow. Non-structural BMPs that are found to be ineffective should be modified to incorporate optimizing adjustments to improve performance or be replaced by other effective non-structural BMPs. The results from this assessment should also be used to determine structural BMP selection and the schedule for structural BMP implementation. The BCS should include an annual schedule for in-depth non-structural BMP assessment and optimizing adjustments.

- Scheduled Continuous Budget and Funding Efforts- Securing budget and funding for non-structural BMP staffing and equipment should be scheduled early and continue until the bacteria TMDLs are met. The BCS should include a schedule for staff time, including position and job description, authorized for securing budget and funding for non-structural BMP implementation.

Structural BMP phasing:

- Scheduled Initial Structural BMP Analysis– Structural BMP analysis should utilize all available information, including the non-structural BMP assessment, to identify, locate, design and build structural BMPs, or a train of BMPs, to meet the these bacteria TMDLs. The BCS should include a schedule for structural BMP analysis.
- Scheduled Annual BMP Construction - The BCS should include a projected general construction schedule with a realistic and justifiable timeline for BMP construction.
- Scheduled Annual BMP Assessment, Optimization Adjustments, and Maintenance - Assessment for structural BMPs should begin immediately upon initial BMP completion, followed by continuously scheduled BMP assessment, optimization adjustments, and maintenance, to both the individual structural BMPs and the structural BMP program as a whole. The BCS should include an annual schedule for in-depth structural BMP assessment.
- Scheduled Continuous Budget and Funding Effort - Securing budget and funding for structural BMPs and additional maintenance staff should be scheduled early and continue until the bacteria TMDLs are met. The BCS should include a schedule for staff time, including position and job description, authorized for securing budget and funding for structural BMP implementation.

Subsequent reports should assess and describe the effectiveness of implementing the Bacteria Load Reduction Plan. Effectiveness assessments should be based on a program effectiveness assessment framework, such as the one developed by the California Stormwater Quality Association (CASQA, no date). Using the CASQA framework as an example, the assessments should address the framework's outcome levels 1-5 on an annual basis, and outcome level 6 once every five years.⁶ Methods used for assessing

⁶ Outcome level 1 assesses compliance with activity-based permit requirements. Outcome level 2 assesses changes in attitudes, knowledge, and awareness. Outcome level 3 assesses behavioral change and BMP implementation. Outcome level 4 assesses pollutant load reductions. Outcome level 5 assesses changes in urban runoff and discharge water quality. Outcome level 6 assesses changes in receiving water quality. See CASQA "An Introduction to Stormwater Program Effectiveness Assessment."

effectiveness should include the following or their equivalent: surveys, pollutant loading estimations, and receiving water quality monitoring. The long-term strategy should also discuss the role of monitoring data in substantiating or refining the assessment. Once WQOs have been attained, a reduced level of monitoring may be appropriate.

In addition to these requirements, if load-based numerical WQBELs are included in the NPDES requirements, the monitoring requirements should include flow and bacteria density measurements to determine if bacteria loads in effluent are in compliance with WQBELs.

The BLRPs are the municipal dischargers' opportunity to propose methods for assessing compliance with WQBELs that implement TMDLs. The monitoring components included in the BLRPs should be formulated according to particular compliance assessment strategies. The monitoring components are expected to be consistent with, and support whichever compliance assessment methods are proposed. The San Diego Water Board will coordinate with the municipal dischargers during the development of their proposed monitoring components and associated compliance assessment methods.

If NPDES requirements are not likely to be issued, reissued or revised within 6 months of OAL approval of these TMDLs, the San Diego Water Board may issue an investigative/monitoring order to dischargers pursuant to sections 13267 or 13383 of the Water Code. This order would require BMP planning and receiving water quality monitoring in adherence to performance measures described above.

The BLRPs may be re-evaluated at set intervals (such as 5-year renewal cycles for NPDES requirements, or upon request from named dischargers, as appropriate and in accordance with the San Diego Water Board priorities). Plans may be iterative and adaptive according to assessments and any special studies.

(3) Additional Actions

Take Enforcement Actions

The San Diego Water Board shall consider enforcement actions,⁷ as necessary, against any discharger failing to comply with applicable WDRs or discharge prohibitions. Enforcement actions may be taken, as necessary, to control the discharge of bacteria to impaired shorelines to attain compliance with the

⁷ An enforcement action is any formal or informal action taken to address an incidence of actual or threatened noncompliance with existing regulations or provisions designed to protect water quality. Potential enforcement actions including notices of violation (NOVs), notices to comply (NTCs), imposition of time schedules (TSO), issuance of cease and desist orders (CDOs) and cleanup and abatement orders (CAOs), administrative civil liability (ACL), and referral to the attorney general (AG) or district attorney (DA). The San Diego Water Board generally implements enforcement through an escalating series of actions to: (1) assist cooperative dischargers in achieving compliance; (2) compel compliance for repeat violations and recalcitrant violators; and (3) provide a disincentive for noncompliance.

bacteria WLAs specified in this Technical Report, or to attain compliance with the bacteria WQOs.

Recommend High Priority for Grant Funds

The San Diego Water Board shall recommend that the State Water Board assign a high priority to awarding grant funding⁸ for projects to implement the bacteria TMDLs. Special emphasis will be given to projects that can achieve quantifiable bacteria load reductions consistent with the specific bacteria TMDL WLAs and LAs.

(B) Specific Implementation Objectives

As shown in Tables [inset table numbers here], no load reductions are required for total coliform, fecal coliform, and *Enterococcus* for Shelter Island Shoreline Park during wet weather or dry weather conditions. Additionally, the modeling results indicate that no load reductions are required for total and fecal coliform for any of the impaired shoreline segments during wet weather conditions. According to the modeling results, only *Enterococcus* wet weather load reductions are required for Baby Beach.

For dry weather, Baby Beach requires between approximately 83 percent and 96 percent wasteload reductions for total coliform, fecal coliform, and *Enterococcus*. However, based only on the water quality data collected during 2006, the number of samples that exceed the REC-1 WQOs are less than the allowable number of exceedances for recommending removal from the 303(d) List. This trend implies that the water quality in the impaired shoreline segments may already meet REC-1 WQOs during dry weather. However, additional monitoring is required to confirm this trend.

While the BLRPs required from the dischargers will still be a requirement, if current trends continue, monitoring and permanent implementation of the current programs and BMPs may be adequate in meeting the wet weather and dry weather TMDLs.

Therefore, assuming the water quality data continue the trend that will support delisting before the NPDES requirement revisions are considered, specific objectives of this Implementation Plan after delisting is found to be appropriate are as follows:

1. Persons responsible for monitoring the impaired shoreline segments of Baby Beach and Shelter Island Shoreline Park for bacteria will continue with the monitoring program to ensure REC-1 WQOs are maintained.

⁸ In most cases, the State Water Board administers the awarding of grants funded from Proposition 13, Proposition 50, Clean Water Act section 319(h) and other federal appropriations to projects that can result in measurable improvements in water quality, watershed condition, and/or capacity for effective watershed management. Many of these grant fund programs have specific set-asides for expenditures in the areas of watershed management and TMDL project implementation for non-point source pollution.

2. If REC-1 WQOs are exceeded, actions outlined in Attachment B of Order Nos. R9-2007-0001 and R9-2002-0001 in section II.C, Coastal Storm Drain Outfall Monitoring, will be implemented.
3. If sources of bacteria persist at levels that exceed water quality standards, then the persons responsible will take appropriate actions to identify and eliminate the source or sources of the chronic contamination.

If the impaired shoreline segments of Baby Beach and Shelter Island Shoreline Park remain on or are put back on the 303(d) List during subsequent iterations of the 303(d) listing process, the San Diego Water Board will revise the NPDES requirements to be consistent with these TMDLs.

(C) Coordination and Execution of Special Studies

The San Diego Water Board recognizes that coordination and execution of special studies by dischargers and other interested persons could result in improved TMDL analyses that more accurately protect beneficial uses. Areas of study that could benefit TMDL analysis include collection of data that can be used to improve model output, improved understanding of bacteria levels and the relationship to health effects, and identification of an appropriate and affordable method(s) to measure pathogens directly. Additionally, studies designed to measure BMP effectiveness and bacteria source identification will be useful for dischargers in identifying appropriate strategies to meet the requirements of this TMDL project.

(1) Collect Data Useful for Model Improvement

Calibration and validation of the computer models used for TMDL analysis was based on limited data (water quality and/or flow) and assumed values for input parameters such as rates for bacteria die-off and re-growth. Especially limited are data related to fecal bacteria that can be attributed to natural sources (e.g., waterfowl and other sources within the waters). Studies designed to collect additional data that can be used for model improvement will result in more accurate TMDL results. Also, data from each watershed can be used to construct models that are applicable to the watershed from which the data originated.

(2) Improve Understanding Between Bacteria Levels and Health Effects

The San Diego Water Board recognizes that there are potential problems associated with using indicator bacteria WQOs to indicate the presence of human pathogens in receiving waters free of sewage discharges. The indicator bacteria WQOs were developed, in part, based on epidemiological studies in waters with sewage inputs. The risk of contracting a water-borne illness from contact with urban runoff devoid of sewage, or human-source bacteria is not known. Some pathogens, such as *giardia* and *cryptosporidium* can be contracted from animal hosts. Likewise, domestic animals can pass on human pathogens through their feces. These and other uncertainties need to be

addressed through special studies and, as a result, revisions to the TMDLs established in this project may be appropriate.

As information is gathered, initiating special studies to understand the uncertainties between bacteria levels and bacteria sources within the watersheds may be useful. Specifically, continuing research may be helpful to answer the following questions:

- What is the risk of illness from swimming in water contaminated with urban/stormwater runoff devoid of sewage?
- Do exceedances of the bacteria water quality objectives from animal sources (wildlife and domestic) increase the risk of illness?
- Are there other, more appropriate surrogates for measuring the risk of illness than the indicator bacteria WQOs currently used?

Addressing these uncertainties is needed to maximize effectiveness of strategies to reduce the risk of illness, which is currently measured by indicator bacteria densities. Dischargers may work with the San Diego Water Board to determine if such special studies are appropriate.

(3) Identification of Method for Direct Pathogen Measurement

Ultimately, the San Diego Water Board supports the idea of measuring pathogens (the agents causing impairment of beneficial uses) rather than indicator bacteria (surrogates for pathogens). However, as stated previously, indicator bacteria have been used to measure water quality historically because measurement of pathogens is both difficult and costly. The San Diego Water Board is supportive of any efforts by the scientific community to perform epidemiological studies and/or investigate the feasibility of measuring pathogens directly. The San Diego Water Board further supports subsequent modification of WQOs as a result of such studies. Ultimately, TMDLs will be recalculated if WQOs are modified due to results from future studies.

(D) Compliance Schedule

Baby Beach Compliance Schedule

According to Tables [Insert table numbers], no wet weather wasteload reductions are required for TC and FC. This means that according to the wet weather models for Baby Beach, REC-1 WQOs for total and fecal coliform are not expected to be exceeded due to discharges from the MS4s. The only wet weather wasteload reductions required for MS4s discharging into the receiving waters along the shoreline at Baby Beach is for *Enterococcus*. The compliance schedule for Baby Beach to achieve wet weather TMDLs is as shown in [Insert table number].

Table [Insert table number]. Compliance Schedule for Baby Beach to Achieve Wet Weather TMDLs

Year (after OAL Approval)	Required Wasteload Reduction	TMDL Compliance Action
1	No reduction required	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
2	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
3	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
4	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
5	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
6	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
7	50 percent ENT reduction	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
8	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
9	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
10	100 percent ENT reduction	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs ▪ Submit request for removal from 303(d) List (if not requested and removed earlier)

The phased compliance schedule to achieve wet weather TMDLs will provide the MS4 dischargers time to identify sources, develop plans and implement enhanced and expanded BMPs capable of achieving the mandated decreases in bacteria densities at the BB shoreline.

According to Tables [Insert table numbers], dry weather wasteload reductions are required for total coliform, fecal coliform, and *Enterococcus*. The trend in the water quality data from Baby Beach indicate that the number of REC-1 WQO exceedances have declined significantly beginning in 2006. According to the City of Dana Point and County of Orange, several BMPs have been implemented, including a dry weather flow diversion structure on the east end of the beach, that are responsible for the significant improvements in water quality. If the current trend continues, the San Diego Water Board expects that the dry weather TMDLs for Baby Beach can be achieved within the next 5 years. The compliance schedule for Baby Beach to achieve dry weather TMDLs is as shown in Table [Insert table number].

Table [Insert table number]. Compliance Schedule for Baby Beach to Achieve Dry Weather TMDLs

Year (after OAL Approval)	Required Wasteload Reduction	TMDL Compliance Action
1	No reduction required	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
2	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
3	50 percent reduction	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
4	Same as above	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs
5	100 percent reduction	<ul style="list-style-type: none"> ▪ Water Quality Monitoring ▪ Implement BMPs ▪ Submit request for removal from 303(d) List (if not requested and removed earlier)

Shelter Island Shoreline Park Compliance Schedule

According to Tables [Insert table numbers], there are no wasteload reductions required for MS4s discharging into the receiving waters along the shoreline at Shelter Island Shoreline Park under both wet weather and dry weather conditions. This means that according to the wet weather and dry weather models for Shelter Island Shoreline Park, REC-1 WQOs are not expected to be exceeded due to discharges from the MS4s.

Given that the modeled wasteload reductions for both wet weather and dry weather conditions for all indicator bacteria are zero percent, no compliance schedules were developed to meet wasteload reductions for SISP. However Shelter Island Shoreline Park will remain on the 303(d) List until enough data are collected to support removing Shelter Island Shoreline Park from the 303(d) List. Therefore, in order to comply with these TMDLs, the responsible municipalities must continue implementing BMPs and collecting data until there are enough data to support and maintain the removal of SISP from the 303(d) List.

The trend in the water quality data from Shelter Island Shoreline Park indicate that the number of REC-1 WQO exceedances have declined significantly since 2003. If the current trend continues, the San Diego Water Board expects that Shelter Island Shoreline Park will have enough data to support removal of Shelter Island Shoreline Park from the 303(d) List by 2010, and no later than 2012.