CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Resolution No. R11-013

Non-Regulatory Amendments to the *Water Quality Control Plan for the Los Angeles Region* to Add Chapter 7 "Total Maximum Daily Loads" (TMDLs) by Incorporating Previously Adopted Amendments

December 8, 2011

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds that:

1. The *Water Quality Control Plan for the Los Angeles Region* (Basin Plan) is the Regional Board's master water quality control planning document for the coastal watersheds of Los Angeles and Ventura Counties. The Basin Plan contains the region's water quality standards, which consist of beneficial uses, water quality objectives to protect those uses, and an anti-degradation policy along with a program of implementation, and non-regulatory descriptions of the region covered by the plan.

2. The Basin Plan may be amended in accordance with California Water Code section 13240 *et seq.*

3. The current Basin Plan was adopted by the Regional Board on June 13, 1994, and approved by the State Water Resources Control Board (State Water Board) on November 17, 1994 and by the State Office of Administrative Law (OAL) on February 23, 1995. Since then, numerous Basin Plan amendments have been adopted by the Regional Board, and approved by the State Water Board, OAL, and US EPA. Included in these Basin Plan amendments are 30 Total Maximum Daily Loads (TMDLs). These TMDLs have not been incorporated into the Basin Plan.

4. Recognizing the value of having a current Basin Plan, its administrative update was identified as a priority project to be addressed during the most recent triennial review (Resolution No. R10-001). This administrative update is being conducted in phases, the second of which is the addition of Chapter 7 "Total Maximum Daily Loads" (TMDLs).

5. Chapter 7 of the Basin Plan: (i) explains details on the legal basis and authority for establishing TMDLs, (ii) describes the components of a TMDL, and (iii) contains TMDL summaries and tables for the 30 TMDLs that have been adopted and approved since the last update of the Basin Plan.

6. This update to the Basin Plan to add Chapter 7 is non-regulatory in nature and does not involve changes to any of the already approved TMDLs. It does not modify nor delete any component of the 30 existing TMDLs in the Los Angeles region. It is part of a multi-step plan to administratively update the entire Basin Plan. The non-substantive changes are intended solely to improve the clarity and convenience of the Basin Plan.

7. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code § 21000 *et seq.*) requirements for preparing environmental documents (14 Cal. Code Regs. § 15251(g); 23 Cal. Code Regs. § 3782). While the Regional Board generally prepares "substitute environmental documents" for amendments to its Basin Plan that contain the required environmental documentation under the State Water Board's CEQA regulations (23 Cal. Code Regs. § 3777), these amendments are non-regulatory administrative updates to the Basin Plan. Therefore, these amendments are exempt from CEQA as they are purely ministerial, do not constitute a "project", and will have no impact on the environment.

8. Regional Board staff has prepared a staff report titled Administrative Update of the Water Quality Control Plan for the Los Angeles Region – Chapter 7 "Total Maximum Daily Loads" that identifies the 30 previously adopted TMDLs, as well as the process for incorporating these TMDLs into the Basin Plan through the addition of Chapter 7.

9. The public has had a reasonable opportunity to participate in the review of the proposed amendments to add Chapter 7 to the Basin Plan. A draft of the Staff Report, the tentative Resolution, and the compiled Chapter 7, were released for public comment on September 30, 2011 to allow a 45-day public comment period in advance of the public hearing. Regional Board staff responded to written comments received from the public. The proposed amendments and staff report have been revised as appropriate in response to comments.

10. A Notice of Hearing was published and circulated 45 days preceding Regional Board action.

11. On December 8, 2011, prior to the Regional Board's action on this Resolution, a public hearing was held to consider adoption of the proposed administrative update to add Chapter 7 to the Basin Plan. Notice of the hearing was published in the Los Angeles Times and Ventura County Star on September 30, 2011, in accordance with the requirements of Water Code section 13244.

12. The amendments are non-regulatory administrative updates to the Basin Plan and the Regional Board is not adopting or revising water quality objectives. Therefore, sections 13241 and 13242 of the Water Code do not apply to this action. While the Regional Board is not required to consider the factors in Water Code section 13241, the Regional Board nevertheless finds that these amendments will have no impact on any of the factors set forth in Water Code section 13241.

13. The Regional Board finds that these non-regulatory administrative updates do not have scientific elements requiring independent, external scientific peer review in accordance with Health and Safety Code section 57004.

14. A non-regulatory Basin Plan amendment does not become effective until approved by the State Water Board and until OAL has concurred on its non-regulatory status.

15. If during the approval process, Regional Board staff, the State Water Board or State Water Board staff, or OAL determines that minor, non-substantive modifications to

the language of the amendment are needed for clarity or consistency, the Executive Officer should make such changes consistent with the Regional Board's intent in adopting this amendment, and should inform the Regional Board of any such changes.

16. This Basin Plan amendment does not involve adoption or revision of water quality standards for surface water. Thus, US Environmental Protection Agency (USEPA) approval is not required.

THEREFORE, BE IT RESOLVED THAT:

1. Pursuant to Water Code section 13240, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby approves the Staff Report and adopts the amendments to the *Water Quality Control Plan for the Los Angeles Region* to add Chapter 7 "Total Maximum Daily Loads" as an administrative update to incorporate the 30 previously adopted TMDLs as set forth in Attachment A hereto.

2. The Regional Board is taking this action pursuant to Regional Board Resolution No. R10-001 (Resolved Clause 1(c)), in which the Regional Board identified the administrative update of the Basin Plan as a basin planning priority to be addressed during the 2008-2010 Triennial Review. Adding Chapter 7 "Total Maximum Daily Loads" is one phase of the update.

3. The Executive Officer is directed to forward copies of the Basin Plan amendment to the State Water Board in accordance with the requirements of Water Code section 13245.

4. The Regional Board requests that the State Water Board approve the Basin Plan amendment in accordance with the requirements of Water Code sections 13245 and 13246.

5. The Regional Board authorizes the Executive Officer or his designee to submit the amendments adopted by this Resolution to OAL for concurrence on its non-regulatory status and to USEPA for informational purposes.

6. If during the approval process, Regional Board staff, the State Water Board or State Water Board staff, or OAL determines that minor, non-substantive modifications to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Regional Board of any such changes.

I, Samuel Unger, 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, Los Angeles Region, on December 8, 2011.

Samuel Unger

Samuel Unger, P.E.
Executive Officer

California Regional Water Quality Control Board
Los Angeles Region

Attachment to Resolution No. R11-013

7 TMDLs (Total Maximum Daily Loads)

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Introduction

Legal Basis and Authority

Section 303(d)(1)(a) of the Clean Water Act (CWA) requires that "each state shall identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters." The CWA also requires states to establish a priority ranking for these waters. This list of prioritized impaired waterbodies is known as the 303(d) list. The CWA then requires that Total Maximum Daily Loads (TMDLs) be established for waters on the 303(d) list. On California's 1998 303(d) list, the Los Angeles Regional Water Quality Control Board (RWQCB) identified 832 waterbody reaches as water quality impaired. Since this listing, these impaired reaches have been consolidated into 92 "TMDL Analytical Units" in order to better manage and prioritize impaired watersheds for TMDL development.

A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. This court order directs the USEPA to complete TMDLs for all impaired waters within 12 years. A schedule was established in the consent decree for the completion of the first 29 TMDLs within 7 years. The remaining TMDLs will be scheduled by Regional Board staff within the 12-year period.

The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and Section 303(d) of the CWA, as well as in USEPA guidance documents (e.g., USEPA, 1991). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at "levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality" (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). This Water Quality Control Plan for the Los Angeles Region (Basin Plan), and applicable statewide plans, serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the RWQCB.

Before approval by USEPA or incorporation into the Basin Plan, TMDLs must be subject to public review (40 CFR 130.7). Public review requirements for Basin Plan Amendments are described in Chapter 1 of this document.

TMDL Components

TMDLs include the following technical components, which provide the analytical basis for the TMDLs.

- **Problem Statement**: A description of the waterbody/watershed setting, beneficial use impairments, and pollutants or stressors causing the impairment.
- **Numeric Targets**: For each stressor addressed in the TMDL, appropriate measurable indicators and associated numeric targets based on numeric or narrative water quality standards, which express the target or desired condition for the existing or potential beneficial uses.
- **Source Analysis**: An assessment of relative contributions of pollutant or stressor sources to the waterbody and the extent of needed discharge reductions or controls.
- **Loading Capacity/Seasonal Variations and Critical Conditions/Linkage Analysis**: The loading capacity is an estimate of the assimilative capacity of the waterbody for the pollutant of concern taking into account seasonal variations and critical conditions. The linkage analysis describes the analytical basis for concluding that the load allocations along with the margin of safety will not exceed the loading capacity of the waterbody.
- **Load Allocations/Margin of Safety**: The allocation of allowable loads or load reductions among different sources, providing an adequate margin of safety. These allocations are usually expressed as waste load allocations for point sources, load allocations for nonpoint sources, and contributions from natural sources. The margin of safety takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Allocations can be expressed in terms of mass loads or other appropriate measures. The TMDL equals the sum of the above allocations and the margin of safety and cannot exceed the loading capacity for the waterbody.

In addition to these technical components, TMDLs must include a public participation component, an implementation plan, and a monitoring plan. Before approval by USEPA or incorporation into the Basin Plan, TMDLs must be subject to public review (40 CFR 130.7). Public review requirements for Basin Plan Amendments are described in Chapter 1 of this document. The implementation plan should include a description of best management practices, point source controls or other actions necessary to implement the TMDL as well as how and when the necessary controls will be accomplished and who is responsible for each measure. The monitoring plan is required to evaluate the effectiveness of the TMDL and should include a schedule for reviewing and revising, if necessary, the TMDL and associated implementation measures.

Organization of Chapter

As TMDLs are developed, this chapter (Chapter 7) of the Basin Plan will be amended to include summaries of each TMDL in chronological order of Board approval.

7-1 San Gabriel River East Fork Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 28, 1999.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on May 25, 2000.

This TMDL was approved by:
The State Water Resources Control Board on June 15, 2000.
The Office of Administrative Law on September 8, 2000.
The U.S. Environmental Protection Agency on December 14, 2000.

The effective date of this TMDL is: April 17, 2001.

The following table includes all the elements of this TMDL.

Table 7-1 TMDL Summaries

Watershed	**Reach**	**Pollutant**
San Gabriel River	***East Fork***	***Trash***
Element	**Derivation of Numbers**	
Problem Statement	High recreational use of the river results in trash being deposited in and along the stream, posing a threat to water quality.	
Water Quality Objective	Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses. Water shall not contain suspended or settable material in concentrations that cause nuisance or adversely affect beneficial uses.	
Numeric Target	No trash in the river	
Source Analysis	Picnicking and camping are the primary sources of trash.	
Responsible Party	U.S. Forest Service	
Load Allocations	Zero trash discharged to the river.	
Margin of Safety	Implicit Margin of Safety based on conservative interpretation of narrative standard	
Seasonal Variations and Critical Conditions	Peak recreational usage is June through September based on Forest Service, Regional Board and Los Angeles County Department of Public Works field observations.	

Implementation Measures	The USFS shall submit a "TMDL Implementation Plan" within 60 days of the effective date of this amendment. The Plan shall include a detailed discussion of litter control measures to be implemented. The TMDL specifies that implementation and monitoring must begin by no later than 90 days after the effective date of this amendment. The USFS must demonstrate compliance with the TMDL (numeric target) by April 1, 2003. The Regional Board must approve any variations from this schedule.
Monitoring	The USFS must conduct monitoring downstream of each of the four informal picnic areas referenced in the TMDL once per month during the peak use season (June-September.) Monitoring of each of the four informal picnic areas may be conducted every other month during the rest of the year. Two short-term surveys shall be conducted each year. One survey shall be conducted during a summer holiday weekend by setting up trash collection nets in the river over a period of four days (Friday through Monday). A wet season survey using trash collection nets over four days shall also be conducted.

*The complete administrative record for the TMDL is available for review upon request.

7-2 Los Angeles River Watershed Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on September 19, 2001.

This TMDL was approved by:
The State Water Resources Control Board on February 19, 2002.
The Office of Administrative Law on July 16, 2002
The U.S. Environmental Protection Agency on August 1, 2002.

This TMDL was set aside by:
The Regional Water Quality Control Board on June 8, 2006.

This TMDL was remanded by:
The State Water Resources Control Board on July 19, 2006.

This TMDL was adopted by:
The Regional Water Quality Control Board on August 9, 2007.

This TMDL was approved by:
The State Water Resources Control Board on April 15, 2008.
The Office of Administrative Law on July 1, 2008.
The U.S. Environmental Protection Agency on July 24, 2008.

The effective date of this TMDL is: September 23, 2008.

The following table includes all the elements of this TMDL.

Table 7-2.1. Los Angeles River Watershed Trash TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Trash in the Los Angeles River is causing impairment of beneficial uses. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD), estuarine habitat (EST); marine habitat (MAR); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); spawning, reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); shellfish harvesting (SHELL); wetland habitat (WET); and cold freshwater habitat (COLD).
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)*	Zero trash in all waterbodies.
Source Analysis	Stormwater discharge is the major source of trash in the river. Nonpoint sources, i.e., direct deposition of trash by people or wind into the water body, is a de minimus source of trash loading to the LA River.
Loading Capacity	Zero

Element	Key Findings and Regulatory Provisions
Waste Load Allocations	Baseline Waste Load Allocations for each city in the Los Angeles River Watershed are as provided in Table 7.2.2. The TMDL requires phased reductions over a period of 9 years, from existing baseline loads to zero (0). Phase II stormwater permittees (including educational institutions) also have a final wasteload allocation of zero. An implementation schedule for these permittees will be established once their stormwater permit has been developed.
Load Allocations	The load allocations for nonpoint source trash discharges to the LA River are zero.
Implementation	This TMDL will be implemented through stormwater permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act: (Water Code section 13000 et seq.). Compliance with the final waste load allocation may be achieved through a full capture system. A full capture system is any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area. The Rational Equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map in Figure A), and A= subdrainage area (acres). The isohyetal map may be updated annually by the Los Angeles County hydrologist to reflect additional rain data gathered during the previous year. Annual updates published by the Los Angeles County Department of Public Works are prospectively incorporated by reference into this TMDL and accompanying Basin Plan amendment. The Executive Officer has authority to certify, as full-capture, any trash reduction system that meets the operating and performance requirements as described above. To the extent nonpoint source implementation of load allocations is necessary, it will be accomplished, consistent with the Plan for Nonpoint Source Pollution Control Policy, with waste discharge requirements, waivers of waste discharge requirements, or any appropriate order, including a cleanup and abatement order, pursuant to e.g., sections 13263, 13269, and/or 13304. An implementation report, outlining how responsible agencies intend to comply with the TMDL, will be prepared six months after the effective date of the TMDL.
Margin of Safety	“Zero discharge” is a conservative standard which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the storm drain occurs primarily during or shortly after a rain event of greater than 0.25 inches.

Figure A

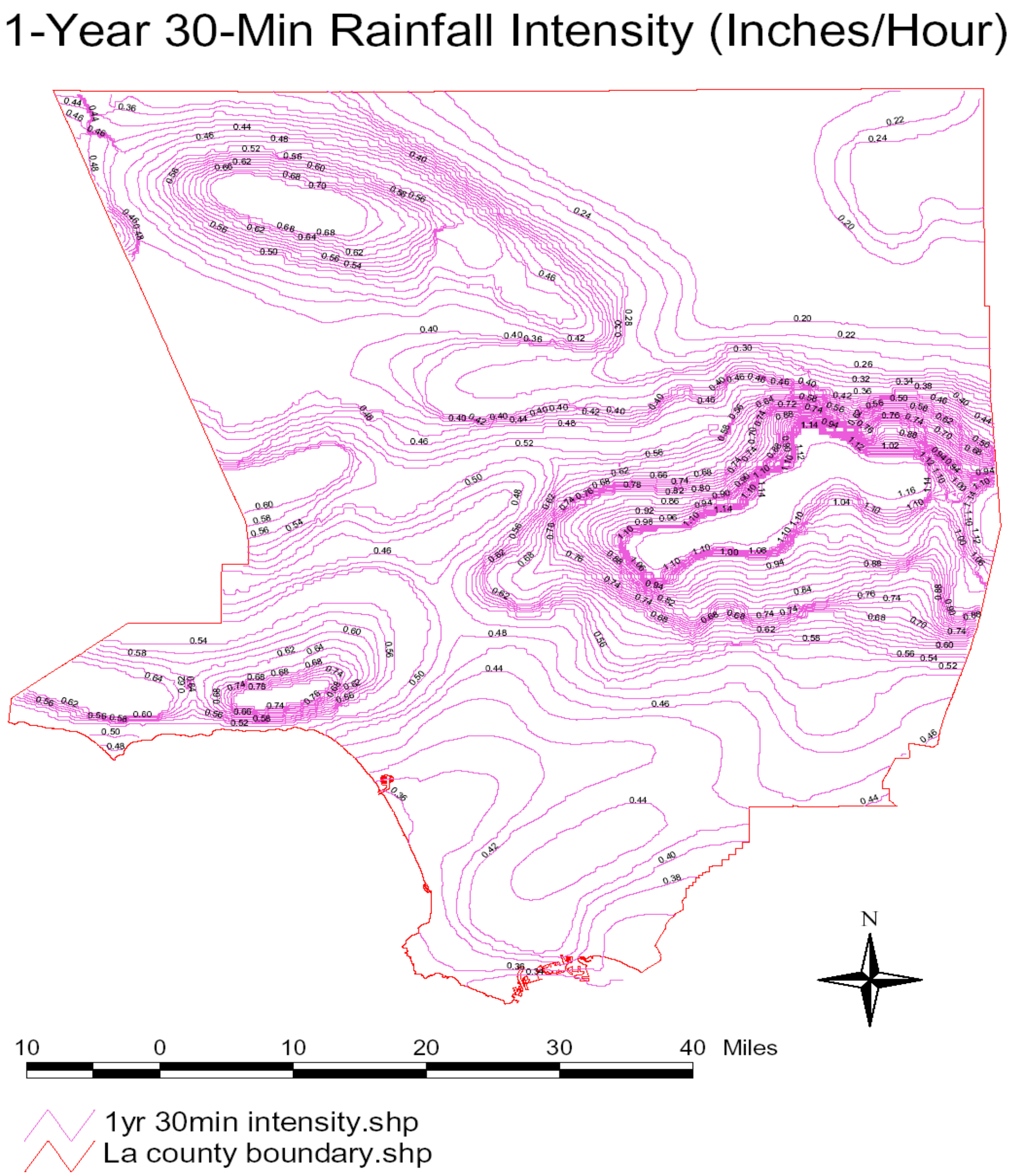

Figure A: Isohyethal Map of Rainfall Intensities in Portions of Los Angeles County

Table 7-2.2. Los Angeles River Trash TMDL Baseline Waste Load Allocations (gallons and lbs of trash).

City	WLA (gals)	WLA (lbs)
Alhambra	39903	68761
Arcadia	50108	93036
Bell*	16026	25337
Bell Gardens	13500	23371
Bradbury	4277	12160
Burbank*	92590	170389
Calabasas	22505	52230
Carson	6832	10208
Commerce	58733	85481
Compton*	53191	86356
Cudahy	5935	10061
Downey	39063	68507
Duarte	12210	23687
El Monte	42208	68267
Glendale*	140314	293498
Hidden Hills	3663	10821
Huntington Park	19159	30929
Irwindale	12352	17911
La Cañada Flintridge	33496	73747
Long Beach*	87135	149759
Los Angeles*	1374845	2572500
Los Angeles County*	310223	651806
Lynwood	28201	46467
Maywood	6129	10549
Monrovia	46687	100988
Montebello	50369	83707
Monterey Park	38899	70456
Paramount	27452	44490
Pasadena*	111998	207514
Pico Rivera	13953	22549
Rosemead	27305	47378
San Fernando	13947	23077
San Gabriel	20343	36437
San Marino	14391	29147
Santa Clarita	901	2326
Sierra Madre	11611	25192
Signal Hill	9434	14220
Simi Valley	137	344
South El Monte	15999	24319
South Gate	43904	72333
South Pasadena	14907	28357
Temple City	17572	31819
Vernon	47203	66814
Caltrans	59421	66566

*Military Installations were not included in calculation of Baseline WLA.

Table 7.2.3. Los Angeles River Trash TMDL: Implementation Schedule.[1]

(Required percent reductions based on initial baseline wasteload allocation of each city)

End of Storm Year	Implementation	Waste Load Allocation	Compliance Point
Sept 30, 2008	Implementation: Year 1	60% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 60% of the baseline load
Sept 30, 2009	Implementation: Year 2	50% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 55% of the baseline load calculated as a 2-year annual average
Sept 30, 2010	Implementation: Year 3[2]	40% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 50% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2011	Implementation: Year 4	30% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 40% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2012	Implementation: Year 5	20% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 30% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2013	Implementation: Year 6	10% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 20% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2014	Implementation: Year 7	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 10% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2015	Implementation: Year 8	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 3.3% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2016	Implementation: Year 9	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 0% of the baseline load calculated as a rolling 3-year annual average

1 "Notwithstanding the zero trash target and the baseline waste load allocations shown in Table 5, a Permittee will be deemed in compliance with the Trash TMDL in areas served by a Full Capture System within the Los Angeles River Watershed."

2 As specified in Section VI.A., the Regional Board will review and reconsider the final Waste Load Allocations once a reduction of 50% has been achieved and sustained.

7-3 Ballona Creek Trash TMDL*

This TMDL was adopted by:
The Regional Water Quality Control Board on September 19, 2001.

This TMDL was approved by:
The State Water Resources Control Board on February 19, 2002.
The Office of Administrative Law on July 18, 2002.
The U.S. Environmental Protection Agency on August 1, 2002.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on March 4, 2004.

This amended TMDL was approved by:
The State Water Resources Control Board on September 30, 2004.
The Office of Administrative Law on February 8, 2005.
[U.S. Environmental Protection Agency approval not required for amendment to implementation plan]

The effective date of this TMDL is: August 11, 2005.

The following table presents the key elements of this TMDL.

Table 7-3.1 Ballona Creek: Trash TMDL Elements

Element	Derivation of Numbers
Problem Statement	Trash in Ballona Creek is causing impairment of beneficial uses. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD), estuarine habitat (EST); marine habitat (MAR); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); spawning, reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); shellfish harvesting (SHELL); wetland habitat (WET); and cold freshwater habitat (COLD).
Numeric Target *(Interpretation of the narrative water quality objective, used to calculate the load allocations)*	Zero trash in the river.
Source Analysis	Stormwater discharge is the major source of trash in the river.
Loading Capacity	Zero.
Waste Load Allocations	Phased reduction for a period of 10 years, from existing baseline load to zero.
Implementation	This TMDL will be implemented through stormwater permits and via the authority vested in the Executive Officer by section13267 of the Porter-Cologne Water Quality Control Act: Water Code section 13000 et seq. Compliance with the final waste load allocation may be achieved through a full capture system. A full capture system is any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area.

Implementation (continued)	Rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map in Figure A), and A= subdrainage area (acres). The isohyetal map may be updated annually by the Los Angeles County hydrologist to reflect additional rain data gathered during the previous year. Annual updates published by the Los Angeles County Department of Public Works are prospectively incorporated by reference into this TMDL and accompanying Basin Plan amendment.
Margin of Safety	"Zero discharge" is a conservative standard which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the storm drain occurs primarily during or shortly after a rain event of greater than 0.25 inches.

*The complete administrative record for the TMDL is available for review upon request.

Figure A

1-Year 30-Min Rainfall Intensity (Inches/Hour)

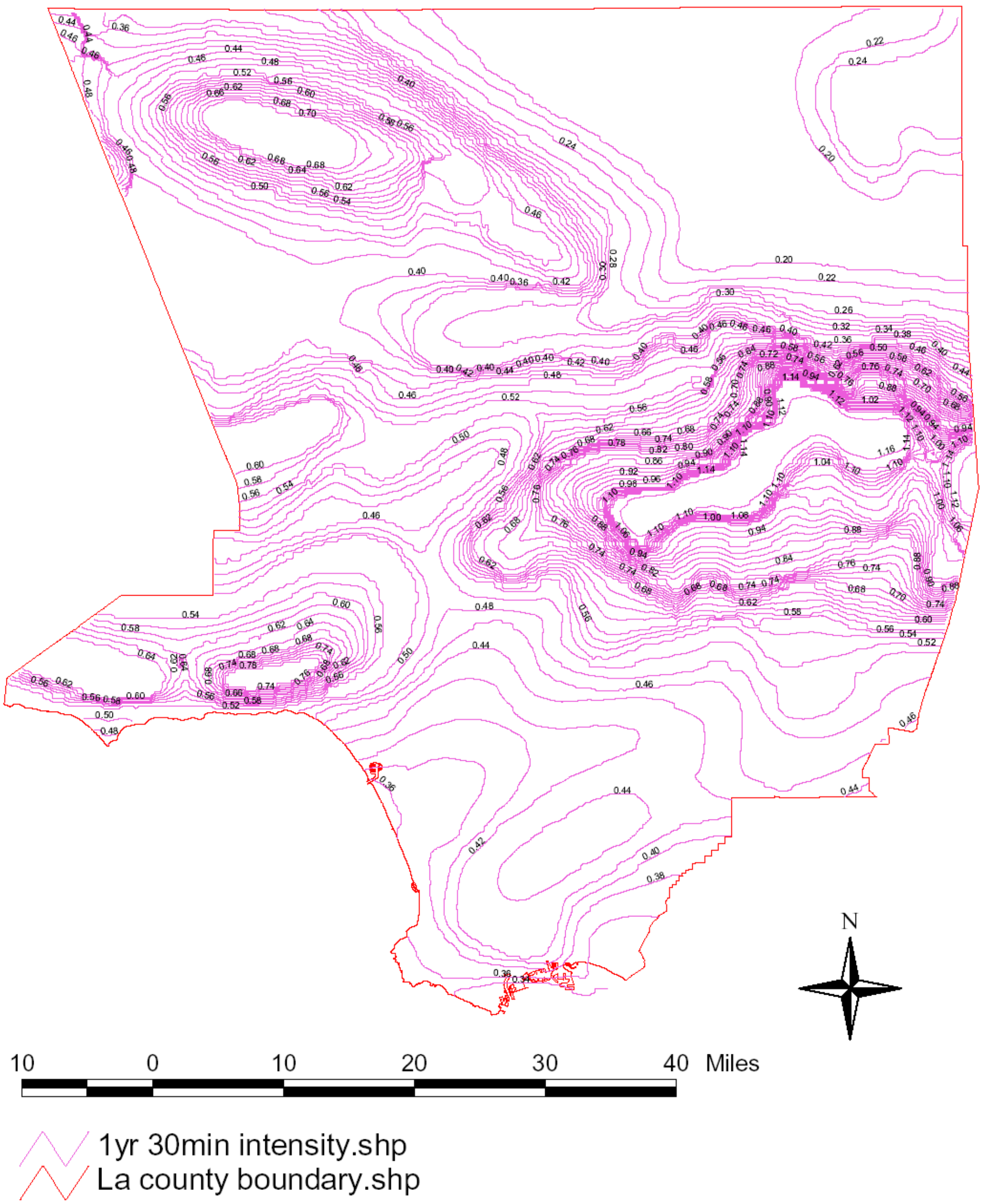

Table 7-3.2 Ballona Creek Trash TMDL: Implementation Schedule[1]
(Default waste load allocations expressed as cubic feet of uncompressed trash and % reduction)

Year	Baseline Monitoring/ Implementation	Waste Load Allocation	Compliance Point
1 10/1/01-- 9/30/02	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
2 10/1/02-- 9/30/03	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
3 10/1/03-- 9/30/04	Baseline Monitoring (optional)/ Implementation: Year 1	90% (9,985 for the Municipal permittees, 1,472 for Caltrans)	No compliance point (target of 90%)
4 10/1/04-- 9/30/05	Baseline Monitoring (optional)/ Implementation: Year 2	80% (8,875 for the Municipal permittees, 1,308 for Caltrans)	No compliance point (target of 80%)
5 10/1/05-- 9/30/06	Implementation: Year 3	70% (7,776 for the Municipal permittees; 1,146 for Caltrans)	Compliance is 80% of the baseline load calculated as a rolling 3-year annual average (8,875 for the Municipal permittees; 1,308 for Caltrans).
6 10/1/06-- 9/30/07	Implementation: Year 4	60% (6,656 for the Municipal permittees; 981 for Caltrans)	70% of the baseline load the baseline load calculated as a rolling 3-year annual average (7,776 for the Municipal permittees; 1,146 for Caltrans).
7 10/1/07-- 9/30/08	Implementation: Year 5[2]	50% (5,547 for the Municipal permittees; 818 for Caltrans)	60% of the baseline load calculated as a rolling 3-year annual average (6,656 for the Municipal permittees; 981 for Caltrans)
8 10/1/08-- 9/30/09	Implementation: Year 6	40% (4,438 for the Municipal permittees; 654 for Caltrans)	50% of the baseline load calculated as a rolling 3-year annual average (5,547 for the Municipal permittees; 818 for Caltrans).
9 10/1/09-- 9/30/10	Implementation: Year 7	30% (3,328 for the Municipal permittees; 491 for Caltrans)	40% of the baseline load calculated as a rolling 3-year annual average (4,438 for the Municipal permittees; 654 for Caltrans).
10 10/1/10-- 9/30/11	Implementation: Year 8	20% (2,218 for the Municipal permittees; 327 for Caltrans).	30% of the baseline load calculated as a rolling 3-year annual average (3,328 for the Municipal permittees; 491 for Caltrans).
11 10/1/11-- 9/30/12	Implementation: Year 9	10% (1,110 for the Municipal permittees; 164 for Caltrans).	20% of the baseline load calculated as a rolling 3-year annual average (2,220 for the Municipal permittees; 327 for Caltrans).
12 10/1/12-- 9/30/13	Implementation: Year 10	0 or 0 % of the baseline load.	10% of the baseline load calculated as a rolling 3-year annual average (1,110 for the Municipal permittees; 164 for Caltrans.

13 10/1/13-- 9/30/14	Implementation: Year 11	0 or 0 % of the baseline load.	3.3 % of the baseline load calculated as a rolling 3-year annual average (366 for the Municipal permittees, 54 for Caltrans).
14 10/1/14-- 9/30/15	Implementation: Year 12	0 or 0 % of the baseline.	0 or 0 % of the baseline load.

1 "Notwithstanding the zero trash target and the default waste load allocations shown in Table 7-3.2, a Permittee will be deemed in compliance with the Trash TMDL in areas served by a Full Capture System within the Ballona Creek and Estuary Watershed."

2 The Regional Board will review and reconsider the final Waste Load Allocations once a reduction of 50% has been achieved and sustained.

Table 7-3.3. Ballona Creek Trash TMDL: Significant Dates

30 days after receipt of the Executive Officer's request as authorized by Section 13267 of the Water Code.	Submit baseline monitoring plan(s).
120 days after receipt of the Executive Officer's request as authorized by Section 13267 of the Water Code.	List of facilities that are outside of the permittee's jurisdiction but drain to a portion of the permittee's storm drain system, which discharges to Ballona Creek.
Within the first 2 years after approval of this basin plan amendment; to be extended to 4 years at the option of the permittees	Collection of baseline data.
72 hours after each rain event	Clean out of and measurement of trash retained.
Every 3 months during dry weather	Clean out of and measurement of trash retained.

7-4 Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only)*

This TMDL was adopted by:
The Regional Water Quality Control Board on January 24, 2002.

This TMDL was approved by:
The State Water Resources Control Board on September 19, 2002.
The Office of Administrative Law on December 9, 2002.
The U.S. Environmental Protection Agency on June 19, 2003.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on December 12, 2002.

This amended TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on May 20, 2003.
The U.S. Environmental Protection Agency on June 19, 2003.

The effective date of this TMDL is: July 15, 2003.

The following table summarizes the key elements of this TMDL.

Table 7-4.1. Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many Santa Monica Bay (SMB) beaches. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan, as amended by the Regional Board on October 25, 2001. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives are as follows: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The targets apply throughout the year. The compliance point for the targets is the wave wash[1], where there is a freshwater outlet (i.e., storm drain or creek) to the beach, or at ankle depth at beaches without a freshwater outlet. The geometric mean targets may not be exceeded at any time. For the single sample targets, each existing shoreline monitoring site is assigned an allowable number of exceedance days for two time periods (summer dry weather and winter dry weather as defined in Table 7-4.2a). (A separate amendment will address the allowable number of wet weather exceedance days.) The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing shoreline bacteriological water quality.
Source Analysis	With the exception of isolated sewage spills, dry weather urban runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to SMB beaches during dry weather. Limited natural runoff and groundwater may also potentially contribute to elevated bacterial indicator densities during winter dry weather. This is supported by the finding that historical monitoring data from the reference beach indicate no exceedances of the single sample targets during summer dry weather and on average only three percent exceedance during winter dry weather.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the beach do not significantly affect bacterial indicator densities at SMB beaches. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above.
Waste Load Allocations	Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under "Numeric Target." Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each shoreline monitoring site and corresponding subwatershed, the allowable number of exceedance days is set for two time periods. These two periods are: 1. summer dry weather (April 1 to October 31), and 2. winter dry weather (November 1 to March 31).

Element	Key Findings and Regulatory Provisions
Waste Load Allocations	The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality.[2] All responsible jurisdictions and responsible agencies[3] within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each associated shoreline monitoring site identified in Table 7-4.2a below. The three Publicly Owned Treatment Works (POTWs)[4] discharging to Santa Monica Bay are each given individual WLAs of zero (0) days of exceedance during both summer dry weather and winter dry weather.
Implementation	This TMDL will be implemented in two phases over a 6-year period. The regulatory mechanisms used to implement the TMDL will include primarily the Los Angeles County Municipal Storm Water NPDES Permit, the Caltrans Storm Water Permit, the three NPDES permits for the POTWs, and the authority vested in the Executive Officer via 13267 of the Porter-Cologne Water Quality Control Act. Within 3 years of the effective date of the TMDL, summer dry-weather allowable exceedance days and the rolling 30-day geometric mean targets must be achieved. Within 6 years of the effective date, winter dry-weather allowable exceedance days and the rolling 30-day geometric mean targets must be achieved.
Margin of Safety	WLAs of zero days of exceedance during the summer include an implicit margin of safety. The WLAs of a maximum of three days of exceedance during winter dry weather include an implicit margin of safety because the maximum allowable days of exceedance are based on samples collected 50 yards downcurrent of the freshwater outlet at the reference beach. Findings from a bacterial dispersion study of selected freshwater outlets show that there is typically significant dilution between the freshwater outlet, the wave wash (the compliance point), and a point 50 yards downcurrent.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for two time periods (summer dry weather and winter dry weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical period for this dry weather bacteria TMDL is during winter months, when historic shoreline monitoring data for the reference beach indicate that the single sample bacteria objectives are exceeded on average 3% of the dry weather days sampled.

Note: The complete staff report for the TMDL is available for review upon request.

1 The wave wash is defined as the point at which the storm drain or creek empties and the effluent from the storm drain initially mixes with the receiving ocean water.

2 In order to fully protect public health, no exceedances are permitted at any shoreline monitoring location during summer dry weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) exceedance days are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, title 17, section 7958).

3 For the purposes of this TMDL, “responsible jurisdictions and responsible agencies” includes: (1) local agencies that are responsible for discharges from a publicly owned treatment works to the Santa Monica Bay watershed or directly to the Bay, (2) local agencies that are permittees or co-permittees on a municipal storm water permit, (3) local or state agencies that have jurisdiction over a beach adjacent to Santa Monica Bay, and (4) the California Department of Transportation pursuant to its storm water permit.

4 Hyperion Wastewater Treatment Plant, Joint Water Pollution Control Plant, and Tapia Wastewater Reclamation Facility.

Table 7-4.2a. Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only)
Allowable number of days that may exceed Any Single Sample Bacterial Indicator Target For Existing Shoreline Monitoring Stations

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
City of Los Angeles, Environmental Monitoring Division Sites						
S1	Surfrider Beach (breach point) - daily	Malibu Canyon	0	0	3	1
S2	Topanga State Beach	Topanga Canyon	0	0	3	1
S3	Pulga Canyon storm drain - 50 yards east (Will Rogers)	Pulga Canyon	0	0	3	1
S4	Santa Monica Canyon, Will Rogers State Beach	Santa Monica Canyon	0	0	3	1
S5	Santa Monica Municipal Pier - 50 yards southeast	Santa Monica	0	0	3	1
S6	Santa Monica Beach at Pico/Kenter storm drain	Santa Monica	0	0	3	1
S7	Ashland Av. storm drain - 50 yards south (Venice)	Santa Monica	0	0	3	1
S8	Venice City Beach at Windward Av. - 50 yards north	Ballona	0	0	2	1
S10	Ballona Creek entrance - 50 yards south (Dockweiler)	Dockweiler	0	0	3	1
S11	Dockweiler State Beach at Culver Bl.	Dockweiler	0	0	3	1
S12	Imperial Highway storm drain - 50 yards north (Dockweiler)	Dockweiler	0	0	2	1
S13	Manhattan State Beach at 40th Street	Hermosa	0	0	1	1
S14	Manhattan Beach Pier - 50 yards south	Hermosa	0	0	1	1
S15	Hermosa Beach Pier - 50 yards south	Hermosa	0	0	2	1
S16	Redondo Municipal Pier - 50 yards south	Redondo	0	0	3	1
S17	Redondo State Beach at Avenue I	Redondo	0	0	3	1
S18	Malaga Cove, Palos Verdes Estates - daily	Palos Verdes	0	0	1	1
Los Angeles County Department of Health Services Sites						
DHS (010)	Leo Carillo Beach (REFERENCE BEACH)	Arroyo Sequit Canyon	0	0	3	1
DHS (009)	Nicholas Beach	Nicholas Canyon	0	0	0	0
DHS (010a)	Broad Beach	Trancas Canyon	0	0	3	1
DHS (008)	Trancas Beach entrance	Trancas Canyon	0	0	0	0
DHS (007)	Westward Beach, SE end	Zuma Canyon	0	0	0	0

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
DHS (006)	Paradise Cove	Ramirez Canyon	0	0	3	1
DHS (005)	26610 Latigo Shore Drive	Latigo Canyon	0	0	3	1
DHS (005a)	Corral Beach	Latigo Canyon	0	0	3	1
DHS (004)	Puerco Beach	Corral Canyon	0	0	3	1
DHS (003)	Malibu Point, Malibu Colony Dr.	Malibu Canyon	0	0	3	1
DHS (003a)	Surfrider Beach, Malibu, 50 yds.	Malibu Canyon	0	0	3	1
DHS (002)	Malibu Pier	Malibu Canyon	0	0	3	1
DHS (001a)	Las Flores Beach	Las Flores Canyon	0	0	3	1
DHS (001)	Big Rock Beach	Piedra Gorda Canyon	0	0	3	1
DHS (101)	17200 Pacific Coast Hwy.	Santa Ynez Canyon	0	0	3	1
DHS (102)	Bel Air Bay Club, 16801 Pacific	Santa Ynez Canyon	0	0	3	1
DHS (103)	Temescal Storm Drain	Pulga Canyon	0	0	3	1
DHS (104a)	San Vicente Blvd. extended	Santa Monica	0	0	3	1
DHS (104)	Montana Ave. Storm Drain	Santa Monica	0	0	3	1
DHS (105)	Wilshire Blvd., Santa Monica	Santa Monica	0	0	3	1
DHS (106)	Strand Street extended	Santa Monica	0	0	3	1
DHS (106a)	Ashland Storm Drain	Santa Monica	0	0	3	1
DHS (107)	Venice City Beach at Brooks Av.	Ballona	0	0	3	1
DHS (108)	Venice Pier, Venice	Ballona	0	0	3	1
DHS (109)	Topsail Street extended	Ballona	0	0	3	1
DHS (110)	World Way extended	Dockweiler	0	0	3	1
DHS (111)	Opposite Hyperion Plant, 1 mile	Dockweiler	0	0	3	1
DHS (112)	Grand Avenue extended	Dockweiler	0	0	3	1

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
DHS (113)	26th Street extended	Hermosa	0	0	0	0
DHS (114)	Herondo Street extended	Hermosa	0	0	3	1
DHS (115)	Topaz Street extended	Redondo	0	0	3	1
County Sanitation Districts of Los Angeles County Sites						
LACSD1	Long Point	Palos Verdes	0	0	1	1
LACSD2	Abalone Cove	Palos Verdes	0	0	0	0
LACSD3	Portuguese Bend Cove	Palos Verdes	0	0	1	1
LACSD5	Royal Palms	Palos Verdes	0	0	1	1
LACSD6	Wilder Annex	Palos Verdes	0	0	1	1
LACSD7	Cabrillo Beach, oceanside	Palos Verdes	0	0	1	1
LACS-DMC	Malaga Cove	Palos Verdes	0	0	1	1
LACSDBC	Bluff Cove	Palos Verdes	0	0	1	1

Notes: The allowable number of exceedance days during winter dry weather is calculated based on the 10th percentile year in terms of non-rain days at the LAX meteorological station.

The number of allowable exceedances during winter dry weather is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical shoreline data.

^Dry weather days are defined as those with <0.1 inch of rain and those days not less than 3 days after a rain day. Rain days are defined as those with >=0.1 inch of rain.

* A re-opener is scheduled for four years after the effective date of the TMDL in order to re-evaluate the allowable exceedance days during winter dry weather based on additional monitoring data.

Table 7-4.2b. Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only) Required Reduction in Number of Days Exceeding Single Sample Bacterial Indicator Targets for Existing Shoreline Monitoring Stations

	Compliance Deadline		**3 years after effective date**	**6 years after effective date**
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
	City of Los Angeles, Environmental Monitoring Division Sites			
S1	Surfrider Beach (breach point) - daily	Malibu Canyon	48	31
S2	Topanga State Beach	Topanga Canyon	10	8
S3	Pulga Canyon storm drain - 50 yards east (Will Rogers)	Pulga Canyon	4	6
S4	Santa Monica Canyon, Will Rogers State Beach	Santa Monica Canyon	36	7
S5	Santa Monica Municipal Pier - 50 yards south-east (Santa Monica)	Santa Monica	54	22
S6	Santa Monica Beach at Pico/Kenter storm drain (Santa Monica)	Santa Monica	15	20
S7	Ashland Av. storm drain - 50 yards south (Venice)	Santa Monica	16	6
S8	Venice City Beach at Windward Av. - 50 yards north	Ballona	3	0
S10	Ballona Creek entrance - 50 yards south (Dockweiler)	Dockweiler	7	3
S11	Dockweiler State Beach at Culver Bl.	Dockweiler	6	1
S12	Imperial Highway storm drain - 50 yards north (Dockweiler)	Dockweiler	7	0
S13	Manhattan State Beach at 40th Street	Hermosa	1	0
S14	Manhattan Beach Pier - 50 yards south	Hermosa	1	0
S15	Hermosa Beach Pier - 50 yards south	Hermosa	2	0
S16	Redondo Municipal Pier - 50 yards south	Redondo	16	9
S17	Redondo State Beach at Avenue I	Redondo	2	0
S18	Malaga Cove, Palos Verdes Estates - daily	Palos Verdes	1	0
	Los Angeles County Department of Health Services Sites			
DHS (010)	Leo Carillo Beach (REFERENCE BEACH)	Arroyo Sequit Canyon	0	0
DHS (009)	Nicholas Beach	Nicholas Canyon	7	0
DHS (010a)	Broad Beach	Trancas Canyon	3	3
DHS (008)	Trancas Beach entrance	Trancas Canyon	5	0
DHS (007)	Westward Beach, SE end	Zuma Canyon	8	0

	Compliance Deadline		3 years after effective date	6 years after effective date
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
DHS (006)	Paradise Cove	Ramirez Canyon	16	9
DHS (005)	26610 Latigo Shore Drive	Latigo Canyon	11	13
DHS (005a)	Corral Beach	Latigo Canyon	3	5
DHS (004)	Puerco Beach	Corral Canyon	0	7
DHS (003)	Malibu Point, Malibu Colony Dr.	Malibu Canyon	23	6
DHS (003a)	Surfrider Beach, Malibu, 50 yds.	Malibu Canyon	58	25
DHS (002)	Malibu Pier	Malibu Canyon	42	14
DHS (001a)	Las Flores Beach	Las Flores Canyon	18	7
DHS (001)	Big Rock Beach	Piedra Gorda Canyon	32	20
DHS (101)	17200 Pacific Coast Hwy.	Santa Ynez Canyon	3	9
DHS (102)	Bel Air Bay Club, 16801 Pacific	Santa Ynez Canyon	14	5
DHS (103)	Temescal Storm Drain	Pulga Canyon	17	0
DHS (104a)	San Vicente Blvd. extended	Santa Monica	7	0
DHS (104)	Montana Ave. Storm Drain	Santa Monica	7	0
DHS (105)	Wilshire Blvd., Santa Monica	Santa Monica	15	4
DHS (106)	Strand Street extended	Santa Monica	8	6
DHS (106a)	Ashland Storm Drain	Santa Monica	24	2
DHS (107)	Venice City Beach at Brooks Av.	Ballona	3	10
DHS (108)	Venice Pier, Venice	Ballona	4	0

	Compliance Deadline		3 years after effective date	6 years after effective date
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
DHS (109)	Topsail Street extended	Ballona	11	0
DHS (110)	World Way extended	Dockweiler	5	1
DHS (111)	Opposite Hyperion Plant, 1 mile	Dockweiler	3	4
DHS (112)	Grand Avenue extended	Dockweiler	8	5
DHS (113)	26th Street extended	Hermosa	5	0
DHS (114)	Herondo Street extended	Hermosa	5	1
DHS (115)	Topaz Street extended	Redondo	8	12
	County Sanitation Districts of Los Angeles County Sites			
	Long Point	Palos Verdes	1	0
	Abalone Cove	Palos Verdes	1	0
	Portuguese Bend Cove	Palos Verdes	1	0
	Royal Palms	Palos Verdes	1	0
	Wilder Annex	Palos Verdes	1	0
	Cabrillo Beach, oceanside	Palos Verdes	1	0
	Malaga Cove	Palos Verdes	2	0
	Bluff Cove	Palos Verdes	0	0
* A re-opener is scheduled for four years after the effective date of the TMDL in order to re-evaluate the allowable exceedance days and necessary reductions during winter dry weather based on additional monitoring data. ** Required reductions are based on the assumption of daily sampling.				

Table 7-4.3. Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only): Significant Dates

Date	Action
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must submit coordinated shoreline monitoring plan(s), including a list of new sites or sites relocated to the wave wash at which time responsible jurisdictions and responsible agencies will select between daily and weekly shoreline sampling.
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must identify and provide documentation on 342 potential discharges to Santa Monica Bay beaches listed in Appendix C of the TMDL Staff Report dated January 11, 2002. Documentation must include a Report of Waste Discharge (ROWD) where necessary. Responsible jurisdictions and responsible agencies must identify and provide documentation on potential discharges to the Area of Special Biological Significance (ASBS) in northern Santa Monica Bay from Latigo Point to the County line. Cessation of the discharges into the ASBS shall be required in conformance with the California Ocean Plan.
4 years after effective date of TMDL	Re-open TMDL to re-evaluate allowable winter dry weather exceedance days based on additional data on bacterial indicator densities in the wave wash, a re-evaluation of the reference system selected to set allowable exceedance levels, and a re-evaluation of the reference year used in the calculation of allowable exceedance days.
3 years after effective date of the TMDL	Achieve compliance with allowable exceedance days as set forth in Table 7-4.2a and rolling 30-day geometric mean targets during summer dry weather (April 1 to October 31).
6 years after effective date of the TMDL	Achieve compliance with allowable exceedance days as set forth in Table 7-4.2a and rolling 30-day geometric mean targets during winter dry weather (November 1 to March 31).

7-4 Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only)*

This TMDL was adopted by:
The Regional Water Quality Control Board on December 12, 2002.

This TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on May 20, 2003.
The U.S. Environmental Protection Agency on June 19, 2003.

The effective date of this TMDL is: July 15, 2003.

The following table summarizes the key elements of this TMDL.

Table 7-4.4. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many Santa Monica Bay (SMB) beaches. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation (REC-1) use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan, as amended by the Regional Board on October 25, 2001. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the wave wash[1] where there is a freshwater outlet (i.e., publicly-owned storm drain or natural creek) to the beach, or at ankle depth at beaches without a freshwater outlet. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing shoreline monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing shoreline bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing shoreline monitoring site is assigned an allowable number of exceedance days during wet weather, defined as days with 0.1 inch of rain or greater and the three days following the rain event. (A separate amendment incorporating the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL addressed the allowable number of summer and winter dry-weather exceedance days.)

Element	Key Findings and Regulatory Provisions
Source Analysis	With the exception of isolated sewage spills, storm water runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to SMB beaches during wet weather. Because the bacterial indicators used as targets in the TMDL are not specific to human sewage, storm water runoff from undeveloped areas may also be a source of elevated bacterial indicator densities. For example, storm water runoff from natural areas may convey fecal matter from wildlife and birds or bacteria from soil. This is supported by the finding that, at the reference beach, the probability of exceedance of the single sample targets during wet weather is 0.22.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the beach do not significantly affect bacterial indicator densities at SMB beaches. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met in the wave wash and throughout the day, no degradation allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under “Numeric Target.” Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each shoreline monitoring site and corresponding subwatershed, an allowable number of exceedance days is set for wet weather. The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality. All responsible jurisdictions and responsible agencies[2] within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each associated shoreline monitoring site identified in Table 7-4.5 below. The three Publicly Owned Treatment Works (POTWs), the City of Los Angeles’ Hyperion Wastewater Treatment Plant, Los Angeles County Sanitation Districts’ Joint Water Pollution Control Plant, and the Las Virgenes Municipal Water Districts’ Tapia Wastewater Reclamation Facility, discharging to Santa Monica Bay are each given individual WLAs of zero (0) days of exceedance during wet weather.

Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Because all storm water runoff to SMB beaches is regulated as a point source, load allocations of zero days of exceedance are set in this TMDL. If a nonpoint source is directly impacting shoreline bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the shoreline monitoring location may have further obligations as described under "Compliance Monitoring" below.
Implementation	The regulatory mechanisms used to implement the TMDL will include primarily the Los Angeles County Municipal Storm Water NPDES Permit (MS4 Permit), the Caltrans Storm Water Permit, the three NPDES permits for the POTWs, the authority contained in sections 13267 and 13263 of the Water Code, and regulations to be adopted pursuant to section 13291 of the Water Code. Each NPDES permit assigned a waste load allocation shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable waste load allocation(s) as a permit requirement. The implementation schedule will be determined on the basis of the implementation plan(s), which must be submitted to the Regional Board by responsible jurisdictions and agencies within two years of the effective date of the TMDL (see Table 7-4.7). After considering the implementation plan(s), the Regional Board shall amend the TMDL at a public hearing and, in doing so, will adopt an individual implementation schedule for each jurisdictional group (described in paragraph 3 below) that is as short as possible taking into account the implementation approach being undertaken. Responsible jurisdictions and agencies must clearly demonstrate in the above-mentioned plan whether they intend to pursue an integrated water resources approach.[3] If an integrated water resources approach is pursued, responsible jurisdictions and agencies may be allotted up to an 18-year implementation timeframe, based on a clear demonstration of the need for a longer schedule in the implementation plan, in recognition of the additional planning and time needed to achieve the multiple benefits of this approach. Otherwise, at most a 10-year implementation timeframe will be allotted, depending upon a clear demonstration of the time needed in the implementation plan. The subwatersheds associated with each beach monitoring location may include multiple responsible jurisdictions and responsible agencies. Therefore, a "primary jurisdiction," defined as the jurisdiction comprising greater than fifty percent of the subwatershed land area, is identified for each subwatershed (see Table 7-4.6).[4] Seven primary jurisdictions are identified within the Santa Monica Bay watershed, each with a group of associated subwatersheds and beach monitoring locations. These are identified as "jurisdictional groups" (see Table 7-4.6).

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The primary jurisdiction of each "jurisdictional group" shall be responsible for submitting the implementation plan described above, which will determine the implementation timeframe for the subwatershed. A jurisdictional group may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of primary responsibility. Two jurisdictional groups may also choose to change the assignment of monitoring locations between the two groups by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of the monitoring location. If an integrated water resources approach is pursued, the jurisdictional group(s) must achieve a 10% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, a 25% reduction within 10 years, and a 50% reduction within 15 years of the effective date of the TMDL. These interim milestones for the jurisdictional group(s) will be re-evaluated, considering planning, engineering and construction tasks, based on the written implementation plan submitted to the Regional Board two years after the effective date of the TMDL (see Table 7-4.7). If an integrated water resources approach is not pursued, the jurisdictional group(s) must achieve a 25% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, and a 50% reduction within 8 years of the effective date of the TMDL (see Table 7-4.7). For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5. The final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach location no later than 18 years after the TMDL's effective date if an integrated water resources approach is pursued, or no later than 10 years after the TMDL's effective date if an integrated water resources approach is not pursued. In addition, the geometric mean targets must be achieved for each individual beach location no later than 18 years or 10 years after the effective date, respectively, depending on whether a integrated water resources approach is pursued or not.

Element	Key Findings and Regulatory Provisions
Margin of Safety	The TMDL is set at levels that are exactly equivalent to the applicable water quality standards along with the proposed reference system/ antidegradation implementation procedure. An implicit margin of safety is included in the supporting water quality model by assuming no dilution between the storm drain and the wave wash, the point of compliance. This is a conservative assumption since studies have shown that there is a high degree of variability in the amount of dilution between the storm drain and wave wash temporally, spatially and among indicators, ranging from 100% to 0%.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (wet weather, summer dry weather and winter dry weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. (The two dry-weather periods are addressed in the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL.) The critical condition for this bacteria TMDL is wet weather generally, when historic shoreline monitoring data for the reference beach indicate that the single sample bacteria objectives are exceeded on 22% of the wet-weather days sampled. To more specifically identify a critical condition within wet weather in order to set the allowable exceedance days shown in Tables 7-4.5 and 7-4.6, the 90th percentile 'storm year'[5] in terms of wet days is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference beach is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	Responsible jurisdictions and agencies as defined in Footnote 2 shall conduct daily or systematic weekly sampling in the wave wash at all major drains[6] and creeks or at existing monitoring stations at beaches without storm drains or freshwater outlets to determine compliance.[7] At all locations, samples shall be taken at ankle depth and on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the wave wash, and no further away than 10 meters down current of the storm drain or outlet.[8] At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If the number of exceedance days is greater than the allowable number of exceedance days for any jurisdictional group at the interim implementation milestones the responsible jurisdictions and agencies shall be considered out-of-compliance with the TMDL. If the number of exceedance days exceeds the allowable number of exceedance days for a target beach at the final implementation deadline, the responsible jurisdictions and agencies within the contributing subwatershed shall be considered out-of-compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code section 13267, daily sampling in the wave wash or at the existing open shoreline monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a beach location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling in the wave wash or at the existing open shoreline monitoring location until all single sample events meet bacteria water quality objectives. If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedence of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code 13178.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If a beach location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Porter-Cologne Water Quality Control Act.

Note: The complete staff report for the TMDL is available for review upon request.

1 The wave wash is defined as the point at which the storm drain or creek empties and the effluent from the storm drain initially mixes with the receiving ocean water.

2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as: (1) local agencies that are responsible for discharges from a publicly owned treatment works to the Santa Monica Bay watershed or directly to the Bay, (2) local agencies that are permittees or co-permittees on a municipal storm water permit, (3) local or state agencies that have jurisdiction over a beach adjacent to Santa Monica Bay, and (4) the California Department of Transportation pursuant to its storm water permit.

3 An integrated water resources approach is one that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Santa Monica Bay or its watershed are listed on the CWA section 303(d) List as impaired. Because an integrated water resources approach will address multiple pollutants, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. An integrated water resources approach shall not only provide water quality benefits to the people of the Los Angeles Region, but it is also anticipated that an integrated approach will incorporate and enhance other public goals. These may include, but are not limited to, water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.

4 Primary jurisdictions are not defined for the Ballona Creek subwatershed or the Malibu Creek subwatershed, since separate bacteria TMDLs are being developed for these subwatersheds.

5 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

6 Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.

7 The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled accordingly.

8 Safety considerations during wet weather may preclude taking a sample in the wave wash.

Table 7-4.5. Final Allowable Wet-Weather Exceedance Days by Beach Location

Beach Monitoring Location	**Estimated no. of wet weather exceedance days in critical year (90th percentile)***	**Final allowable no. of wet weather exceedance days (daily sampling)***
DHS 010 - Leo Carrillo Beach, at 35000 PCH	17	17
DHS 009 - Nicholas Beach- 100 feet west of lifeguard tower	14	14
DHS 010a - Broad Beach	15	15
DHS 008 - Trancas Beach entrance, 50 yards east of Trancas Bridge	19	17
DHS 007 - Westward Beach, east of Zuma Creek	**17**	**17**
DHS 006 - Paradise Cove, adjacent to west side of Pier	**23**	**17**
DHS 005 - Latigo Canyon Creek entrance	**33**	**17**
DHS 005a - Corral State Beach	**17**	**17**
DHS 001a - Las Flores Beach	**29**	**17**
DHS 001 - Big Rock Beach, at 19900 PCH	**30**	**17**
DHS 003 - Malibu Point	**18**	**17**
DHS 003a - Surfrider Beach (second point)- weekly	**45**	**17**
S1 - Surfrider Beach (breach point)- daily	**47**	**17**
DHS 002 - Malibu Pier- 50 yards east	**45**	**17**
S2 - Topanga State Beach	**26**	**17**
DHS 101 - PCH and Sunset Bl.- 400 yards east	**25**	**17**
DHS 102 - 16801 Pacific Coast Highway, Bel Air Bay Club (chain fence)	**28**	**17**
S3 - Pulga Canyon storm drain- 50 yards east	**23**	**17**
DHS 103 - Will Rogers State Beach- Temescal Canyon (25 yrds. so. of drain)	**31**	**17**
S4 - Santa Monica Canyon, Will Rogers State Beach	**25**	**17**
DHS 104a - Santa Monica Beach at San Vicente Bl.	**34**	**17**
DHS 104 - Santa Monica at Montana Av. (25 yrds. so. of drain)	**31**	**17**
DHS 105 - Santa Monica at Arizona (in front of the drain)	**31**	**17**
S5 - Santa Monica Municipal Pier- 50 yards southeast	**35**	**17**
S6 - Santa Monica Beach at Pico/Kenter storm drain	**42**	**17**
DHS 106 - Santa Monica Beach at Strand St. (in front of the restrooms)	**36**	**17**
DHS 106a - Ashland Av. storm drain- 50 yards north	**39**	**17**
S7 - Ashland Av. storm drain- 50 yards south	**22**	**17**
DHS 107 - Venice City Beach at Brooks Av. (in front of the drain)	**40**	**17**
S8 - Venice City Beach at Windward Av.- 50 yards north	**13**	**13**
DHS 108 - Venice Fishing Pier- 50 yards south	**17**	**17**
DHS 109 - Venice City Beach at Topsail St.	**38**	**17**
S11 - Dockweiler State Beach at Culver Bl.	**23**	**17**
DHS 110 - Dockweiler State Beach- south of D&W jetty	**30**	**17**
S12 - Imperial HWY storm drain- 50 yards north	**17**	**17**
DHS 111 - Hyperion Treatment Plant One Mile Outfall	**18**	**17**
DHS 112 - Dockweiler State Beach at Grand Av. (in front of the drain)	**25**	**17**
S10 - Ballona Creek entrance- 50 yards south	**34**	**17**

Beach Monitoring Location	Estimated no. of wet weather exceedance days in critical year (90th percentile)*	Final allowable no. of wet weather exceedance days (daily sampling)*
S13 - Manhattan State Beach at 40th Street	4	4
S14 - Manhattan Beach Pier- 50 yards south	5	5
DHS 114 - Hermosa City Beach at 26th St.	12	12
S15 - Hermosa Beach Pier- 50 yards south	8	8
DHS 115 - Herondo Street storm drain- (in front of the drain)	19	17
S16 - Redondo Municipal Pier- 50 yards south	14	14
DHS 116 - Redondo State Beach at Topaz St. - north of jetty	19	17
S17 - Redondo State Beach at Avenue I	6	6
S18 - Malaga Cove, Palos Verdes Estates-daily	3	3
LACSDM - Malaga Cove, Palos Verdes Estates-weekly	14	14
LACSDB - Palos Verdes (Bluff) Cove, Palos Verdes Estates	0	0
LACSD1 - Long Point, Rancho Palos Verdes	5	5
LACSD2 - Abalone Cove Shoreline Park	1	1
LACSD3 - Portuguese Bend Cove, Rancho Palos Verdes	2	2
LACSD5 - Royal Palms State Beach	6	6
LACSD6 - Wilder Annex, San Pedro	2	2
LACSD7 - Cabrillo Beach, oceanside	3	3

Notes: * The compliance targets are based on existing shoreline monitoring data and assume daily sampling. If systematic weekly sampling is conducted, the compliance targets will be scaled accordingly. These are the compliance targets until additional shoreline monitoring data are collected prior to revision of the TMDL. Once additional shoreline monitoring data are available, the following will be re-evaluated when the TMDL is revised 1) estimated number of wet-weather exceedance days in the critical year at all beach locations, including the reference system(s) and 2) final allowable wet-weather exceedance days for each beach location.

Table 7-4.6. Interim Compliance Targets by Jurisdictional Group

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
1	County of Los Angeles	Caltrans Malibu City of Los Angeles (Topanga only) Calabasas (Topanga only)	Arroyo Sequit	DHS 010	221	212	197
			Carbon Canyon	none			
			Corral Canyon	DHS 005a			
			Encinal Canyon	DHS 010a#			
			Escondido Canyon	none			
			Las Flores Canyon	DHS 001a			
			Latigo Canyon	DHS 005			
			Los Alisos Canyon	none			
			Pena Canyon	none			
			Piedra Gorda Canyon	DHS 001			
			Ramirez Canyon	DHS 006			
			Solstice Canyon	none			
			Topanga Canyon	S2			
			Trancas Canyon	DHS 008			
			Tuna Canyon	none			
			Zuma Canyon	DHS 007			

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
2	City of Los Angeles	Caltrans County of Los Angeles El Segundo (DW only) Manhattan Beach (DW only) Culver City (MDR only) Santa Monica	Castlerock	none	342	324	294
			Dockweiler	S11, DHS 110, S12, DHS 111, DHS 112			
			Marina del Rey	DHS 107, S8#, DHS 108, DHS 109			
			Pulga Canyon	S3, DHS 103			
			Santa Monica Canyon	S4			
			Santa Ynez Canyon	DHS 101, DHS 102			
3	Santa Monica	Caltrans City of Los Angeles County of Los Angeles	Santa Monica	DHS 104a, DHS 104, DHS 105, S5, S6, DHS 106, DHS 106a, S7	257	237	203
4	Malibu	Caltrans County of Los Angeles	Nicholas Canyon	DHS 009#	14	14	14
5	Manhattan Beach	Caltrans El Segundo Hermosa Beach Redondo Beach	Hermosa	S13#, S14#, DHS 114#, S15#	29	29	29

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
6	Redondo Beach	Caltrans Hermosa Beach Manhattan Beach Torrance County of Los Angeles	Redondo	DHS 115, S16#, DHS 116, S17#	58	57	56
7	Rancho Palos Verdes	Caltrans City of Los Angeles Palos Verdes Estates Redondo Beach Rolling Hills Rolling Hills Estates Torrance County of Los Angeles	Palos Verdes Peninsula	S18#, LACSDM#, LACSDB#, LACSD1#, LACSD2#, LACSD3#, LACSD5#, LACSD6#, LACSD7#	36	36	36

Notes: *Interim milestones will be re-calculated during the revision of the TMDL based on shoreline monitoring data collected from the wave wash and a re-evaluation of the most appropriate reference system and reference year. Furthermore, if an integrated water resources approach is pursued, as demonstrated by the implementation plans to be submitted to the Regional Board by the primary jurisdictions within two years of the effective date of the TMDL, the interim milestones will be re-evaluated on the basis of the implementation plan, considering planning, engineering and construction tasks. **Interim milestones for the Malibu and Ballona shoreline monitoring locations will be identified in subsequent bacteria TMDLs to be developed for these two watersheds. ***Monitoring sites are those locations currently monitored by the City of Los Angeles, County Sanitation Districts of Los Angeles County, and the Los Angeles County Department of Health Services at the time of adoption by the Regional Board. This list does not preclude the establishment of additional monitoring stations. For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather. # For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5.

Table 7-4.7. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Significant Dates

Date	Action
120 days after the effective date of the TMDL	Pursuant to a request from the Regional Board, responsible jurisdictions and responsible agencies must submit coordinated shoreline monitoring plan(s) to be approved by the Executive Officer, including a list of new sites* and/or sites relocated to the wave wash at which time responsible jurisdictions and responsible agencies shall select between daily or systematic weekly shoreline sampling.
20 months after the effective date of the TMDL	Responsible jurisdictions and agencies shall provide a draft written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones.
Two years after effective date of TMDL	Responsible jurisdictions and agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones. Under no circumstances shall final compliance dates exceed 10 years for non-integrated approaches or 18 years for integrated water resources approaches. Regional Board staff shall bring to the Regional Board the aforementioned plans as soon as practicable for consideration.
4 years after effective date of TMDL	The Regional Board shall reconsider the TMDL to: (1) refine allowable wet weather exceedance days based on additional data on bacterial indicator densities in the wave wash and an evaluation of site-specific variability in exceedance levels, (2) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (3) re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.

Date	Action
Significant Dates for Responsible Jurisdictions and Agencies *Not* Pursuing an Integrated Water Resources Approach	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
8 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.
Significant Dates for Responsible Jurisdictions and Agencies Pursuing an Integrated Water Resources Approach to Implementation	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 10% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
15 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
18 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.

Notes: *For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather.

7-5 Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on August 7, 2003.

This TMDL was approved by:
The State Water Resources Control Board on November 19, 2003.
The Office of Administrative Law on January 30, 2004.
The U.S. Environmental Protection Agency on March 18, 2004.

The effective date of this TMDL is: March 18, 2004

The following table includes the elements of this TMDL.

Table 7-5.1. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Marina del Rey Harbor (MdRH) Mothers' Beach and back basins. Swimming in marine waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the point at which the effluent from a storm drain initially mixes with the receiving water where there is a freshwater outlet (i.e., publicly-owned storm drain) to the beach, or at ankle depth at beaches without a freshwater outlet, and at surface and depth throughout the Harbor. For Mothers' Beach the targets will apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)

Element	Key Findings and Regulatory Provisions
Source Analysis	Dry-weather urban runoff and storm water conveyed by storm drains are the primary sources of elevated bacterial indicator densities to MdRH Mothers' Beach and back basins during dry and wet-weather. As of December 2002, there were seven dischargers located within the Marina del Rey watershed. These dischargers were issued general NPDES permits, general industrial and/or general construction storm water permits. The bacteria loads associated with these discharges are largely unknown, since most do not monitor for bacteria. However, these discharges are not expected to be a significant source of bacteria. Potential nonpoint sources of bacterial contamination at Mothers' Beach and the back basins of MdRH include marina activities such as waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts and natural sources from birds, waterfowl and other wildlife. The bacteria loads associated with these nonpoint sources are unknown.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the receiving water do not significantly affect bacterial indicator densities. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains initially mixes with the receiving water and back basins throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	The Los Angeles County MS4 and CalTrans storm water permittees and co-permittees are assigned waste load allocations (WLAs) expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under "Numeric Target" at a monitoring site. Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event).

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The County of Los Angeles, City of Los Angeles, Culver City, and California Department of Transportation (CalTrans) are the responsible jurisdictions and responsible agencies[2] for the Marina del Rey Watershed. The County of Los Angeles is the primary jurisdiction because Marina del Rey Harbor is located in an unincorporated area of the County, the County is the lead Permittee in the Los Angeles County Municipal Storm Water NPDES Permit (MS4) stormwater permit, and the Marina is owned and operated by the County of Los Angeles. The responsible jurisdictions and responsible agencies within the Marina del Rey Watershed are jointly responsible for complying with the waste load allocation at monitoring locations impacted by MS4 stormwater discharges. All proposed WLAs for summer dry-weather are zero (0) days of allowable exceedances.[3] The proposed WLAs for winter dry-weather and wet-weather vary by monitoring location as identified in Table 7-5.2. The waste load allocation for the rolling 30-day geometric mean for the County of Los Angeles, City of Los Angeles, Culver City, and CalTrans is zero (0) days of allowable exceedances. As discussed in "Source Analysis", discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the MdR Watershed will also be subject to a WLA of zero days of allowable exceedances.
Load Allocations (for nonpoint sources)	Load allocations are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under "Numeric Target" at a monitoring site. Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Since all storm water runoff to MdRH is regulated as a point source, load allocations of zero (0) days of allowable exceedances for nonpoint sources are set in this TMDL for each time period. The load allocation for the rolling 30-day geometric mean for nonpoint sources is zero (0) days of allowable exceedances. If a nonpoint source is directly impacting bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the monitoring location may have further obligations to identify such sources, as described under "Compliance Monitoring" below.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the CalTrans Storm Water Permit, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Load allocations for nonpoint sources will be implemented within the context of this TMDL. This TMDL will be implemented in three phases over a ten-year period (see Table 7-5.3), unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL). Within three years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved. The Executive Officer of the Regional Board may extend the compliance date no more than one year if he finds that there is insufficient capacity in the sewer line between Marina del Rey and the Hyperion Treatment Plant. Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved, unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL). For those monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above the estimated days for the monitoring location in the critical year as identified in Table 7-5.2. The responsible jurisdictions and the responsible agencies must submit a report to the Executive Officer by July 30, 2005 (see Table 7-5.3) describing how they intend to comply with the dry-weather and wet-weather WLAs. As the primary jurisdiction, the County of Los Angeles is responsible for submitting the implementation plan report described above. In addition, the County of Los Angeles Department of Beaches and Harbor must submit a report detailing its efforts to prohibit discharges from boats in the Harbor (see Table 7-5.3).

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The Marina del Rey Harbor jurisdictional unit may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting reassignment of primary responsibility. The Regional Board intends to reconsider this TMDL, consistent with the scheduled reconsideraton of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board intends to conduct a similar review of this TMDL within 4 years after the effective date. In addition, if a suitable reference watershed that is representative of an enclosed harbor has not been found by this time, the Regional Board may consider implementing a ‘natural source exclusion approach subject to antidegradation policies’ to the Marina del Rey Harbor in lieu of the ‘reference watershed/antidegradation approach’.
Margin of Safety	A margin of safety has been implicitly included through several conservative assumptions, such as the assumption that no dilution takes place between the storm drain and where the effluent initially mixes with the receiving water, and that bacterial degradation rates are not fast enough to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading is during wet weather, when historic monitoring data for MdRH and the reference beach indicate greater exceedance probabilities of the single sample bacteria objectives then during dry-weather.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-5.2, the 90th percentile 'storm year'[4] in terms of wet days[5] is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	Responsible jurisdictions and agencies shall conduct daily or systematic weekly sampling at the initial point of mixing with the receiving water at all major drains[6], at existing monitoring stations and at other designated monitoring stations to determine compliance.[7] For Mothers' Beach the targets will also apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth. Samples collected at ankle depth shall be taken on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the initial point of mixing with the receiving water, and no further away than 10 meters down current of the storm drain or outlet.[8] At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone.[9] If the number of exceedance days is greater than the allowable number of exceedance days, the responsible jurisdictions and agencies shall be considered out of compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code Section 13267, daily sampling where the effluent from the storm drain initially mixes with the receiving water or at the existing monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling where the effluent from the storm drain initially mixes with the receiving water or at the existing monitoring location until all single sample events meet bacteria water quality objectives.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedance of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code Section 13178. Responsible jurisdictions may wish to conduct compliance monitoring at key jurisdictional boundaries as part of this effort. If a location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Water Code. In addition, the MdR responsible jurisdictions and responsible agencies are required to conduct a study to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds, and other nonpoint sources.. Once this study is completed in three years, the Regional Board will adjust the WLAs, if appropriate, based on the study, during the scheduled review of this TMDL.

Note: The complete staff report for the TMDL is available for review upon request.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local agencies that are permittees or co-permittees on a municipal storm water permit, (2) local or state agencies that have jurisdiction over Mothers' Beach or the back basins of MdRH, and (3) the California Department of Transportation pursuant to its storm water permit.

3 In order to fully protect public health, no exceedances are permitted at any monitoring location during summer dry-weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) days of allowable exceedances are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, Title 17, Section 7958).

4 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

5 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

6 Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.

7 The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled by solving for the variable "X" in the following equation: (Number of wet-weather days or dry-weather days in 1993 / 365 days = X / 52 weeks), where the number of wet-weather days and dry-weather days are based on the historical rainfall record at the Los Angeles International Airport also known as "LAX".

8 Safety considerations during wet weather may preclude taking a sample at the initial point of mixing with the receiving water.

9 At some freshwater outlets and storm drains, during high tide conditions, the tide pushes the freshwater discharge back into the drain. As a result, sampling under these conditions is not representative of water quality conditions when the drain is flowing into the surf zone. The tide height at which this situation occurs will vary with the size, slope and configuration of the drain and the beach. Responsible agencies must ensure that samples are collected only when drains are flowing into the surf zone, not when the discharge is pushed back into the drain. Responsible agencies must submit a coordinated monitoring plan within 120 days of the effective date of the TMDL, in which this assurance should be included.

Table 7-5.2. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

Compliance Deadline		3 years after effective date[1]		3 years after effective date[1]		10 years after effective date[2]	
		Summer Dry Weather ^		Winter Dry Weather ^*		Wet Weather ^*	
		April 1 - October 31		November 1 – March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
HYP (S9)	Mothers' Beach, at Lifeguard Tower	0	0	3	1	17	3
DHS (109a)	Mothers' Beach, at Playground Area	0	0	3	1	17	3
DHS (109b)	Mothers' Beach, between Lifeguard Tower and Boat Dock	0	0	3	1	17	3
DHS (109c)	Los Angeles County Fire Dock - end of main channel	0	0	3	1	17	3
DHB (MDR-8)	Mothers' Beach, near first slips outside swim area	0	0	3	1	17	3
DHB (MDR-18)	Mothers' Beach, 20 meters off of the wheel chair ramp	0	0	0	0	15	3
DHB (MDR-19)	Mothers' Beach, end of wheel chair ramp	0	0	3	1	17	3
DHB (MDR-9)	Basin F, innermost end	0	0	3	1	8	1
DHB (MDR-11)	End of Main Channel	0	0	3	1	17	3
DHB (MDR-10)	Basin E, near center of basin	0	0	3	1	17	3
DHB (MDR-20)	Basin E, in front of Tidegate from Oxford Basin	0	0	3	1	17	3

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.
The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station
The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.
[1] The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.
[2] If an Integrated Water Resources Approach is implemented, the compliance period must be the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL.
^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.
* A revision of the TMDL is scheduled for four years after the effective date of the Santa Monica Bay Beaches TMDLs in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources.

Table 7-5.3. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Significant Dates

Date	Action
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies shall submit coordinated monitoring plan(s) to be approved by the Executive Officer. The monitoring plans shall including a list of new sites* and/or sites relocated to include the point where the effluent from the storm drain initially mixes with the receiving water, at least three locations off of Mothers' Beach, and at least one location in each of the other Marina del Rey Basins (i.e., Basins A, B, C, E, F, G, and H). The plan shall include the responsible jurisdictions' and responsible agencies' recommended sampling frequency at each location. The Los Angeles County Department of Beaches and Harbors shall provide a written report to the Regional Board detailing efforts to control discharges from boats, including but not limited to the number of live-aboards and the number of pump-outs per month. The responsible jurisdictions and the responsible agencies must identify and provide documentation on small drains discharging to Mothers' Beach and the Marina del Rey Harbor. Documentation must include a report of waste discharge where necessary.
March 30, 2005 (Draft Report) July 30, 2005 (Final Report)	Responsible jurisdictions and responsible agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively achieve compliance with the dry-weather and wet-weather TMDL Waste Load Allocations. The report shall include implementation methods, an implementation schedule, and proposed milestones.
3 years after effective date of the TMDL	Responsible jurisdictions and responsible agencies shall provide to the Regional Board results of the study conducted to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources at the Oxford Flood Control Basin, Mothers' Beach, and the Harbor
3 years after effective date of the TMDL	Achieve compliance with the allowable exceedance days as set forth in Table 7-5.2 and rolling 30-day geometric mean targets during summer dry-weather (April 1 to October 31) and winter dry weather (November 1 to March 31). The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.
4 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to: (1) refine allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities, an evaluation of site-specific variability in exceedance levels, and the results of the study of relative bacterial loading from sources including but not limited to storm drains, boats, birds, and other nonpoint sources,

Date	Action
4 years after effective date of the TMDL (continued)	(2) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the 'natural sources exclusion approach subject to antidegradation policies' rather than the 'reference system/antidegradation' approach, (3) re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.
10 years after effective date of the TMDL or, if an Integrated Water Resources Approach is implemented, in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL	Achieve compliance with the allowable exceedance days as set forth in Table 7-5.2 and rolling 30-day geometric mean targets during wet-weather.

* For those areas of the marina without an existing monitoring site, responsible jurisdictions and responsible agencies must establish a monitoring site if there is measurable flow from a publicly owned storm drain to the basin during dry weather.

7-6 Upper Santa Clara River Chloride TMDL

This TMDL was adopted by: The Regional Water Quality Control Board on October 24, 2002.
This TMDL was remanded by: The State Water Resources Control Board on February 19, 2003
This TMDL was adopted by: The Regional Water Quality Control Board on July 10, 2003.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on May 6, 2004.
This TMDL was approved by:
The State Water Resource Control Board on July 22, 2004
The Office of Administrative Law on November 15, 2004
The U.S. Environmental Protection Agency on April 28, 2005

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on August 3, 2006.
This TMDL was approved by:
The State Water Resource Control Board on May 22, 2007.
The Office of Administrative Law on July 3, 2007.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on December 11, 2008.
This TMDL was approved by:
The State Water Resource Control Board on October 20, 2009.
The Office of Administrative Law on January 26, 2010.
The U.S. Environmental Protection Agency on April 6, 2010.

The effective date of this TMDL is: April 6, 2010.

Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Problem Statement	Elevated chloride concentrations are causing impairments of the water quality objective in Reach 5 (EPA 303(d) list Reach 7) and Reach 6 (EPA 303(d) list Reach 8) of the Santa Clara River (SCR). These reaches are on the 1998 and 2002 Clean Water Act (CWA) 303(d) lists of impaired water bodies as impaired due to chloride. The objectives for these reaches were set to protect all beneficial uses; agricultural beneficial uses have been determined to be most sensitive, and not currently attained at the downstream end of Reach 5 (EPA 303(d) list Reach 7) and Reach 6 (EPA 303(d) list Reach 8) in the Upper Santa Clara River (USCR). Irrigation of salt sensitive crops such as avocados, strawberries, and nursery crops with water containing elevated levels of chloride results in reduced crop yields. Chloride levels in groundwater in Piru Basin underlying the reach downstream of Reach 5 are also rising.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	Numeric targets are equivalent to conditional site specific objectives (SSOs) that are based on technical studies regarding chloride levels which protect salt sensitive crops and endangered and threatened species, chloride source identification, and the magnitude of assimilative capacity in the upper reaches of the Santa Clara River and underlying groundwater basin. The TMDL special study, Literature Review Evaluation, shows that the most sensitive beneficial uses can be supported with rolling averaging periods as shown in the tables below.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the load allocations)	1. Conditional Surface Water SSOs The conditional SSOs for chloride in the surface water of Reaches 4B, 5, and 6 shall apply and supersede the existing water quality objectives of 100 mg/L only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. Conditional surface water SSOs for Reaches 4B, 5, and 6 of the Santa Clara River are listed as follows:

Reach	Conditional SSO for Chloride (mg/L)	Rolling Averaging Period
6	150	12-month
5	150	12-month
4B	117	3-month
4B Critical Conditions	130[a]	3-month[b]

a. The conditional SSO for chloride in Reach 4B under critical condition shall apply only if the following conditions and implementation requirements are met:

1. Water supply chloride concentrations measured in Castaic Lake are ≥ 80 mg/L.
2. The Santa Clarita Valley Sanitation District (SCVSD) shall provide supplemental water to salt-sensitive agricultural uses that are irrigated with surface water during periods when Reach 4B surface water exceeds 117 mg/L.
3. By May 4, 2020, the 10-year cumulative net chloride loading above 117 mg/L ($CNCl_{117}$)[i] to Reach 4B of the SCR, calculated annually, from the SCVSD Water Reclamation Plants (WRPs) shall be zero or less.

[i] $CNCl_{117} = Cl_{(Above\ 117)} - Cl_{(Below\ 117)} - Cl_{(Export\ Ews)}$

Where:

$Cl_{(Above\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{>117}$[3]]

$Cl_{(Below\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{<=117}$[4]]

$Cl_{(Export\ EWs)}$ = Cl Load Removed by Extraction Wells

[1] WRP Cl Load is determined as the monthly average Cl concentration multiplied by the monthly average flow measured at the Valencia WRP.

[2] Reach 4B Cl Load is determined as the monthly average Cl concentration at SCVSD Receiving Water Station RF multiplied by the monthly average flow measured at USGS Gauging Station 11109000 (Las Brisas Bridge).

[3] Reach 4B Cl $Load_{>117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is above 117 mg/L.

[4] Reach 4B Cl $Load_{<=117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is below or equal to 117 mg/L.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the load allocations)	4. The chief engineer of the SCVSD signs under penalty of perjury and submits to the Los Angeles Regional Water Quality Control Board (Regional Board) a letter documenting the fulfillment of conditions 1, 2, and 3. b. The averaging period for the critical condition SSO may be reconsidered based on results of chloride trend monitoring after the conditional WLAs of this TMDL are implemented. 2. Conditional SSOs for Groundwater Conditional groundwater SSOs are listed as follows: <table><tr><th>Groundwater Basin</th><th>Conditional Groundwater SSO for Chloride (mg/L)</th><th>Rolling Averaging Period</th></tr><tr><td>Santa Clara--Bouquet & San Francisquito Canyons</td><td>150</td><td>12-month</td></tr><tr><td>Castaic Valley</td><td>150</td><td>12-month</td></tr><tr><td>Lower area east of Piru Creek [a]</td><td>150</td><td>12-month</td></tr></table> [a] This objective only applies to the San Pedro formation. Existing objective of 200 mg/L applies to shallow alluvium layer above San Pedro formation. The conditional SSOs for chloride in the groundwater in Santa Clara--Bouquet & San Francisquito Canyons, Castaic Valley and the lower area east of Piru Creek (San Pedro Formation) shall apply and supersede the existing groundwater quality objectives only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1.
Source Analysis	The principal source of chloride into Reaches 5 and 6 of the Santa Clara River is discharges from the Saugus WRP and Valencia WRP, which are estimated to contribute 70% of the chloride load in Reaches 5 and 6. These sources of chloride accumulate and degrade groundwater in the lower area east of Piru Creek in the basin.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Linkage Analysis	A groundwater-surface water interaction (GSWI) model was developed to assess the linkage between chloride sources and in-stream water quality and to quantify the assimilative capacity of Reaches 4A, 4B, 5, and 6 and the groundwater basins underlying those reaches. GSWI was then used to predict the effects of WRP discharges on chloride loading to surface water and groundwater under a variety of future hydrology, land use, and water use assumptions including future discharges from the Newhall Ranch WRP in order to determine appropriate wasteload allocations (WLAs) and load allocations (LAs). The linkage analysis demonstrates that beneficial uses can be protected through a combination of SSOs for surface water and groundwater and reduction of chloride levels from the Valencia WRP effluent through advanced treatment.
Waste Load Allocations (for point sources)	The conditional WLAs for chloride for all point sources shall apply only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. If these conditions are not met, WLAs shall be based on existing water quality objectives for chloride of 100 mg/L. Conditional WLAs for chloride for discharges to Reach 4B by the Saugus and Valencia WRPs are as follows: <table><tr><th>Reach</th><th>Concentration-based Conditional WLA for Chloride (mg/L)</th></tr><tr><td>4B</td><td>117 (3-month Average), 230 (Daily Maximum)</td></tr><tr><td>4B Critical Conditions</td><td>130[a] (3-month Average[b]), 230 (Daily Maximum)</td></tr></table> a. The Conditional WLA under critical conditions shall apply only if the following conditions and implementation requirements are met: 1. Water supply chloride concentrations measured in Castaic Lake are ≥ 80 mg/L. 2. SCVSD shall provide supplemental water to salt-sensitive agricultural uses that are irrigated with surface water during periods when Reach 4B surface water exceeds 117 mg/L. 3. By May 4, 2020, the 10-year cumulative net chloride loading above 117 mg/L ($CNCl_{117}$)[i] to Reach 4B of the SCR, calculated annually, from the Saugus and Valencia WRPs shall be zero or less.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Waste Load Allocations (for point sources) (continued)	[i] $CNCl_{117} = Cl_{(Above\ 117)} - Cl_{(Below\ 117)} - Cl_{(Export\ Ews)}$ Where: $Cl_{(Above\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{>117}$[3]] $Cl_{(Below\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{<=117}$[4]] $Cl_{(Export\ EWs)}$ = Cl Load Removed by Extraction Wells [1] WRP Cl Load is determined as the monthly average Cl concentration multiplied by the monthly average flow measured at the Valencia WRP. [2] Reach 4B Cl Load is determined as the monthly average Cl concentration at SCVSD Receiving Water Station RF multiplied by the monthly average flow measured at USGS Gauging Station 11109000 (Las Brisas Bridge). [3] Reach 4B Cl $Load_{>117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is above 117 mg/L. [4] Reach 4B Cl $Load_{<=117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is below or equal to 117 mg/L. 4. The chief engineer of the SCVSD signs under penalty of perjury and submits to the Regional Board a letter documenting the fulfillment of conditions 1, 2, and 3. b. The averaging period for the critical condition WLA may be reconsidered based on results of chloride trend monitoring after the conditional WLAs of this TMDL are implemented. Discharges to Reaches 5 and 6 by the Saugus and Valencia WRPs will have final concentration-based and mass-based conditional WLAs for chloride based on conditional SSOs as follows: <table><tr><th>WRP</th><th>Concentration-based Conditional WLA for Chloride (mg/L)</th><th>Mass-based Conditional WLA for Chloride (pounds/day)</th></tr><tr><td>Saugus</td><td>150 (12-month Average), 230 (Daily Maximum)</td><td>Q_{Design}*150 mg/L*8.34 (12-month Average)</td></tr><tr><td>Valencia</td><td>150 (12-month Average), 230 (Daily Maximum)</td><td>Q_{Design}*150 mg/L*8.34 – AF_{RO} (12-month Average)</td></tr></table> Where Q_{design} is the design capacity of WRPs in units of million gallons per day (MGD), AF_{RO} is the chloride mass loading adjustment factor for operation of reverse osmosis (RO) facilities, where:

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Waste Load Allocations (for point sources) (continued)	If RO facilities are operated at ≥ 50% Capacity Factor[a] in preceding 12 months $AF_{RO} = 0$ If RO facilities are operated at < 50% Capacity Factor[b] in preceding 12 months AF_{RO} = (50% Capacity Factor – %RO Capacity) * *ChlorideLoadRO*[c] [a] Capacity Factor is based on 3 MGD of recycled water treated with RO, 90% of the time. [b] If operation of RO facilities at <50% rated capacity is the result of conditions that are outside the control of SCVSD, then under the discretion of the Executive Officer of the Regional Board, the AF_{RO} may be set to 0. [c] Chloride load reduction is based on operation of a RO treatment plant treating 3 MGD of recycled water with chloride concentration of 50 mg/L + Water Supply Chloride. Assumes operational capacity factor of 90% and RO membrane chloride rejection rate of 95%. Determination of chloride load based on the following: $ChlorideLoadRO = 90\% \times [(Q_{RO} \times C_{WRP} \times 8.34) \times r] \times (30\ Days/Month)$ Where: Q_{RO} = 3 MGD of recycled water treated with RO C_{WRP} = Chloride concentration in water supply + 50 mg/L r = % Reverse Osmosis chloride rejection (95% or 0.95) 8.34 = Conversion factor (ppd/(mg/L*MGD)) The final WLAs for TDS and sulfate are equal to existing surface water and groundwater quality objectives for TDS and sulfate in Tables 3-8 and 3-10 of the Basin Plan. The Regional Board may revise the final WLAs based on review of trend monitoring data as detailed in the monitoring section of this Basin Plan amendment. Other minor NPDES discharges (as defined in Table 4-1 of the Basin Plan) receive conditional WLAs. The conditional WLA for these point sources is as follows: **Reach** — **Concentration-based Conditional WLA for Chloride (mg/L)** 6 — 150 (12-month Average), 230 (Daily Maximum) 5 — 150 (12-month Average), 230 (Daily Maximum) 4B — 117 (3-month Average), 230 (Daily Maximum) Other major NPDES discharges (as defined in Table 4-1 of the Basin Plan) receive WLAs equal to 100 mg/L. The Regional Board may consider assigning conditional WLAs to other major dischargers based on an analysis of the downstream increase in net chloride loading to surface water and groundwater as a result of implementation of conditional WLAs.

<table>
<tr><th>Element</th><th>Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements
Santa Clara River Chloride</th></tr>
<tr><td>Load Allocation (for non point sources)</td><td>The source analysis indicates nonpoint sources are not a major source of chloride. The conditional LAs for these nonpoint sources are as below:

<table>
<tr><th>Reach</th><th>Concentration-based Conditional LA for Chloride (mg/L)</th></tr>
<tr><td>6</td><td>150 (12-month Average),
230 (Daily Maximum)</td></tr>
<tr><td>5</td><td>150 (12-month Average),
230 (Daily Maximum)</td></tr>
<tr><td>4B</td><td>117 (3-month Average),
230 (Daily Maximum)</td></tr>
</table>

The conditional LAs shall apply only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. If these conditions are not met, LAs are based on existing water quality objectives of 100 mg/L.</td></tr>
<tr><td>Implementation</td><td>Refer to Table 7-6.2.

<u>Implementation of Upper Santa Clara River Conditional Site Specific Objectives for Chloride</u>

In accordance with Regional Board resolution 97-002, the Regional Board and stakeholders have developed an integrated watershed plan to address chloride impairments and protect beneficial uses of surface waters and groundwater basins underlying Reaches 4B, 5, and 6 of the Santa Clara River. The plan involves: 1) Reducing chloride loads and/or increasing chloride exports from the USCR watershed through implementation of advanced treatment (RO) of a portion of the effluent from the Valencia WRP. The advanced treated effluent will be discharged into Reach 4B or blended with extracted groundwater from the Piru Basin underlying Reach 4B and discharged into Reach 4A. The resultant brine from the advanced treatment process will be disposed in a legal and environmentally sound manner. 2) Implementing the conditional SSOs for chloride in surface waters and underlying groundwater basins of the USCR watershed provided in Chapter 3.</td></tr>
</table>

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Implementation *(continued)*	The watershed chloride reduction plan will be implemented through NPDES permits for the Valencia WRP and a new NPDES permit for discharge into Reach 4A. The conditional SSOs for chloride in the USCR watershed shall apply and supersede the regional water quality objectives only when chloride load reductions and/or chloride export projects are in operation and reduce chloride loading in accordance with the following table:

Water Supply Chloride[1]	Chloride Load Reductions[2]
40 mg/L	58,000 lbs per month
50 mg/L	64,000 lbs per month
60 mg/L	71,000 lbs per month
70 mg/L	77,000 lbs per month
80 mg/L	83,000 lbs per month
90 mg/L	90,000 lbs per month
100 mg/L	96,000 lbs per month

[1] Based on measured chloride of the State Water Project (SWP) water stored in Castaic Lake.
[2] Chloride load reduction is based on operation of a RO treatment plant treating 3 MGD of recycled water with chloride concentration of 50 mg/L + Water Supply Chloride. Assumes operational capacity factor of 90% and RO membrane chloride rejection rate of 95%. Determination of chloride load based on the following:

$$ChlorideLoad = 90\% \text{ x } [(Q_{RO} \text{ x } C_{WRP} \text{ x } 8.34) \text{ x } r] \text{ x } (30\ Days/Month)$$

where r = % chloride rejection (95%)
Q_{RO} = 3 MGD of recycled water treated with RO
C_{WRP} = SWP Cl + 50 mg/L

Conditional WLAs

Conditional WLAs for the Saugus and Valencia WRPs will be implemented through effluent limits, receiving water limits and monitoring requirements in NPDES permits. Conditional WLAs for Reach 4B will be implemented as receiving water limits. Conditional WLAs for Reaches 5 and 6 will be implemented as effluent limits.

The implementation plan proposes that during the period of TMDL implementation, compliance for the WRPs' effluent limits will be evaluated in accordance with interim WLAs.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Implementation *(continued)*	Saugus WRP: The interim WLA for chloride is equal to the interim limit for chloride specified in order No. R4-04-004. The interim WLA for TDS is 1000 mg/L as an annual average. The interim WLA for sulfate is 450 mg/L as an annual average. These interim WLAs shall apply as interim end-of-pipe effluent limits, interim groundwater limits, and interim limits in the Non-NPDES WDR for recycled water uses from the Saugus WRP instead of existing water quality objectives. Valencia WRP: The interim WLA for chloride is equal to the interim limit for chloride specified in order No. R4-04-004. The interim WLA for TDS is 1000 mg/L as an annual average. The interim WLA for sulfate is 450 mg/L as an annual average. These interim WLAs shall apply as interim end-of-pipe effluent limits, interim groundwater limits, and interim limits in the Non-NPDES WDR for recycled water uses from the Valencia WRP instead of existing water quality objectives. Other Major NPDES Permits (including Newhall Ranch WRP): The Regional Board may consider assigning conditional WLAs for other major NPDES permits, including the Newhall Ranch WRP, pending implementation of a chloride mass removal quantity that is proportional to mass based chloride removal required for the Valencia WRP. Supplemental Water released to Reach 6 of Santa Clara River: In order to accommodate the discharge of supplemental water to Reach 6, interim WLAs are provided for sulfate of 450 mg/L and TDS of 1000 mg/L as annual averages. The final WLAs are equal to the existing water quality objectives for sulfate and TDS in Table 3-8 of the Basin Plan. The Regional Board may revise the final WLA based on review of trend monitoring data as detailed in the monitoring section of this Basin Plan amendment.
Monitoring	NPDES monitoring: NPDES Permittees will conduct chloride, TDS, and sulfate monitoring to ensure that water quality objectives are being met. Trend monitoring: The SCVSD will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The SCVSD monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations: (a) Shallow alluvium layer in east Piru Basin, (b) San Pedro Formation in east Piru Basin, and (c) groundwater basins under Reaches 5 and 6, which shall be equivalent or greater than existing groundwater monitoring required by NPDES permits for Saugus and Valencia WRPs. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 4B, 5 and 6. The monitoring plan shall include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Monitoring *(continued)*	The plan should propose a monitoring schedule that extends beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures. Trend monitoring: The Reach 4A Permittee will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The Reach 4A permittee monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations (a) Fillmore Basin, and (b) Santa Paula Basin. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 3 and 4A. The monitoring plan should include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that shall extend beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.
Margin of Safety	An implicit margin of safety is incorporated through conservative model assumptions and chloride mass balance analysis. The model is an integrated groundwater surface water model which shows that chloride discharged from the WRPs accumulates in the east Piru Basin. Further mass balance analysis shows that the chloride mass removed from the Piru Basin exceeds the chloride loaded into the Piru Basin from implementation of the conditional SSOs.
Seasonal Variations and Critical Conditions	During dry weather conditions, less surface flow is available to dilute effluent discharge, groundwater pumping rates for agricultural purposes are higher, groundwater discharge is lower, poorer quality groundwater may be drawn into the aquifer, and evapotranspiration effects are greater than in wet weather conditions. During drought, reduced surface flow and increased groundwater extraction continues through several seasons with greater impacts on groundwater resources and discharges. Dry and critically dry periods affecting the Sacramento and San Joaquin River Valleys reduce fresh-water flow into the Sacramento-San Joaquin Delta and result in higher than normal chloride concentrations in the State Water Project supply within the California aqueduct system. These increased chloride levels are transferred to the upper Santa Clara River. This critical condition is defined as when water supply concentrations measured in Castaic Lake are ≥ 80 mg/L. These critical conditions were included in the GSWI model to determine appropriate allocations and implementation scenarios for the TMDL.

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
1. Alternate Water Supply a) Should (1) the in-river concentration at Blue Cut, the Reach 4B boundary, exceed the conditional SSO of 117 mg/L, measured for the purposes of this TMDL as a rolling three-month average, (2) each agricultural diverter provide records of the diversion dates and amounts to the Regional Board and Santa Clarita Valley County Sanitation Districts of Los Angeles County (SCVSD) for at least 2 years after May 4, 2005 and (3) each agricultural diverter provides photographic evidence that diverted water is applied to avocado, strawberry or other chloride sensitive crop and evidence of a water right to divert, then the SCVSD will be responsible for providing an alternative water supply, negotiating the delivery of alternative water by a third party, or providing fiscal remediation to be quantified in negotiations between the SCVSD and the agricultural diverter at the direction of the Regional Water Quality Control Board until such time as the in-river chloride concentrations do not exceed the conditional SSO. b) Should the instream concentration exceed 230 mg/L more than two times in the three year period, the discharger identified by the Regional Board Executive Officer shall be required to submit, within ninety days of a request by the Regional Board Executive Officer, a workplan for an accelerated schedule to reduce chloride discharges.	05/04/2005
2. Progress reports will be submitted by the SCVSD to Regional Board staff on a semiannual basis from May 4, 2005 for tasks 4, 6, and 7, and on an annual basis for Tasks 5 and 11. Progress reports will be submitted by the Reach 4A Permittee to Regional Board staff on an annual basis for Task 12.	Semiannually and annually
3. Chloride Source Identification/Reduction, Pollution Prevention and Public Outreach Plan: Six months after May 4, 2005, the SCVSD will submit a plan to the Regional Board that addresses measures taken and planned to be taken to quantify and control sources of chloride, including, but not limited to: execute community-wide outreach programs, which were developed based on the pilot outreach efforts conducted by the SCVSD, assess potential incentive/disincentive programs for residential self-regenerating water softeners, and other measures that may be effective in controlling chloride. The SCVSD shall develop and implement the source reduction/pollution prevention and public outreach program, and report results annually thereafter to the Regional Board. Chloride sources from imported water supplies will be assessed. The assessment will include conditions of drought and low rainfall, and will analyze the alternatives for reducing this source.	11/04/2005

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
4. The SCVSD will convene a technical advisory committee or committees (TAC(s)) in cooperation with the Regional Board to review literature develop a methodology for assessment, and provide recommendations with detailed timelines and task descriptions to support any needed changes to the time schedule for evaluation of appropriate chloride threshold for Task 6. The Regional Board, at a public hearing will re-evaluate the schedule for Task 6 and subsequent linked tasks based on input from the TAC(s), along with Regional Board staff analysis and assessment consistent with state and federal law, as to the types of studies needed and the time needed to conduct the necessary scientific studies to determine the appropriate chloride threshold for the protection of salt sensitive agricultural uses, and will take action to amend the schedule if there is sufficient technical justification.	05/04/2006
5. Groundwater/Surface Water Interaction Model: The SCVSD will solicit proposals, collect data, develop a model in cooperation with the Regional Board, obtain peer review, and report results. The impact of source waters and reclaimed water plans on achieving the water quality objective and protecting beneficial uses, including impacts on underlying groundwater quality, will also be assessed and specific recommendations for management developed for Regional Board consideration. The purpose of the modeling and sampling effort is to determine the interaction between surface water and groundwater as it may affect the loading of chloride from groundwater and its linkage to surface water quality.	11/20/2007
6. Evaluation of Appropriate Chloride Threshold for the Protection of Sensitive Agricultural Supply Use and Endangered Species Protection: The SCVSD will prepare and submit a report on endangered species protection thresholds. The SCVSD will also prepare and submit a report presenting the results of the evaluation of chloride thresholds for salt sensitive agricultural uses, which shall consider the impact of drought and low rainfall conditions and the associated increase in imported water concentrations on downstream crops utilizing the result of Task 5.	11/20/2007
7. Develop SSO for Chloride for Sensitive Agriculture: The SCVSD will solicit proposals and develop technical analyses upon which the Regional Board may base a Basin Plan amendment. 8. Develop Anti-Degradation Analysis for Revision of Chloride Objective by SSO: The SCVSD will solicit proposals and develop draft anti-degradation analysis for Regional Board consideration. 9. Develop a pre-planning report on conceptual compliance measures to meet different hypothetical final conditional wasteload allocations. The SCVSD shall solicit proposals and develop and submit a report to the Regional Board that identifies potential chloride control measures and costs based on different hypothetical scenarios for chloride SSOs and final conditional wasteload allocations.	02/20/2008

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
10. a) Preparation and Consideration of a Basin Plan Amendment (BPA) to revise the chloride objective by the Regional Board. b) Evaluation of Alternative Water Supplies for Agricultural Beneficial Uses: The SCVSD will quantify water needs, identify alternative water supplies, evaluate necessary facilities, and report results, including the long-term application of this remedy. c) Analysis of Feasible Compliance Measures to Meet Final Conditional Wasteload Allocations for Proposed Chloride Objective. The SCVSD will assess and report on feasible implementation actions to meet the chloride objective established pursuant to Task 10a). d) Reconsideration of and action taken on the Chloride TMDL and Final Conditional Wasteload Allocations for the Upper Santa Clara River by the Regional Board.	12/11/2008
11. Trend monitoring: The SCVSD will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The SCVSD monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer, in the following locations: (a) Shallow alluvium layer in east Piru Basin, (b) San Pedro Formation in east Piru Basin, and (c) groundwater basins under Reaches 5 and 6, which shall be equivalent or greater than existing groundwater monitoring required by NPDES permits for Saugus and Valencia WRPs. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 4B, 5 and 6. The monitoring plan shall include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that extends beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.	05/04/2009

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
12. Trend monitoring: The Reach 4A Permittee will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The Reach 4A permittee monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations (a) Fillmore Basin, and (b) Santa Paula Basin. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 3 and 4A. The monitoring plan should include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that shall extend beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.	Submitted with permit application
13. Begin monitoring per approved SVCSD monitoring plan completed in Task 11.	One year after Executive Officer approval of Task 11 monitoring plan for SCVSD
14. Begin monitoring per approved Reach 4A Permittee monitoring plan.	One year after Executive Officer approval of Task 12 monitoring plan for Reach 4A Permittee

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
15. a) Implementation of Compliance Measures, Planning: The SCVSD shall submit a report of planning activities which include but are not limited to: (1) identifying lead state/federal agencies; (2) administering a competitive bid process for the selection of EIR/EIS and Engineering Consultants; (3) Development of Preliminary Planning and Feasibility Analyses; (4) Submittal of Project Notice of Preparation/Notice of Intent; (5) Preparation of Draft Wastewater Facilities Plan and Programmatic EIR; (6) Administration of Public Review and Comment Periods; (7) Development of Final Wastewater Facilities Plan and Programmatic EIR and incorporation and response to comments; (8) Administration of final public review and certification process; and (9) Filing a Notice of Determination and Record of Decision.	05/04/2010
b) Implementation of Compliance Measures, Planning: The SCVSD shall provide a schedule of related tasks and subtasks related to Task 15a), and provide semi-annual progress reports on progress of planning activities, thereafter, until completion of Final Wastewater Facilities Plan and Programmatic EIR.	05/04/2010
16. The Regional Board staff will re-evaluate the schedule to implement control measures needed to meet final conditional WLAs adopted pursuant to Task 10 d) and the schedule for Task 17. The Regional Board, at a public meeting will consider extending the completion date of Task 17 and reconsider the schedule to implement control measures to meet final conditional WLAs adopted pursuant to Task 10 d). The SCVSD will provide the justification for the need for an extension to the Regional Board Executive Officer at least 6 months in advance of the deadline for this task.	05/04/2011

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
17. a) Implementation of Compliance Measures, Complete Environmental Impact Report: The SCVSD shall complete a Wastewater Facilities Plan and Programmatic Environmental Impact Report for facilities to comply with final effluent permit limits for chloride.	05/04/2011
b) Implementation of Compliance Measures, Engineering Design: The SCVSD will begin the engineering design of the recommended project wastewater facilities.	05/04/2011
c) Implementation of Compliance Measures, Engineering Design: The SCVSD will provide a design schedule of related tasks and sub-tasks, and provide semi-annual progress reports on progress of design activities, thereafter, until completion of Final Design. In addition the SCVSD will provide a construction schedule of related tasks and sub-tasks, and provide semi-annual progress reports on progress of construction activities, thereafter, until completion of recommended project wastewater facilities.	05/04/2012
d) Implementation of Compliance Measures, Construction: The SCVSD shall have applied and received all appropriate permits and have completed construction of the recommended project wastewater facilities.	11/04/2014
e) Implementation of Compliance Measures, Start-Up: The SCVSD shall have completed start-up, testing and certification of the recommended project wastewater facilities.	05/04/2015
18. The Regional Board Executive Officer may consider conditional SSOs for TDS and sulfate for Reaches 4B, 5, and 6 based on results of groundwater-surface water interaction studies on accumulation of TDS and sulfate in groundwater, potential impacts to beneficial uses, and an anti-degradation analysis.	05/04/2012
19. The Regional Board staff will re-evaluate the schedule to implement control measures needed to meet final conditional WLAs adopted pursuant to Task 10 d) and the schedule for Task 17. The Regional Board, at a public meeting will consider extending the completion of Task 17 and reconsider the schedule to implement control measures to meet final conditional WLAs adopted for chloride pursuant to Task 10 d). The SCVSD will provide the justification for the need for an extension to the Regional Board Executive Officer at least 6 months in advance of the deadline for this task. The Regional Board will also consider conditional SSOs and final conditional WLAs for TDS and sulfate based on results of Task 18.	11/04/2014

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
20. The interim WLAs for chloride shall remain in effect for no more than 10 years after May 4, 2005. Conditional SSO for chloride in the USCR shall be achieved. Final conditional WLAs for chloride in Reaches 4B, 5, and 6 shall apply by May 5, 2015. The Regional Board may consider extending the completion date of this task as necessary to account for events beyond the control of the SCVSD.	05/04/2015
21. The interim WLAs for TDS and sulfate contained in this BPA (Resolution No. R4-2008-012) shall be implemented no sooner than May 4, 2005, and shall remain in effect until May 4, 2015. Final WLAs shall apply by May 5, 2015 unless conditional SSOs and final conditional WLAs for TDS and sulfate are adopted as described in Task 19.	05/04/2015

7-7 Calleguas Creek Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 24, 2002.

This TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on June 5, 2003.
The U.S. Environmental Protection Agency on June 20, 2003.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on September 11, 2008.

This TMDL was re-approved by:
The State Water Resources Control Board on June 16, 2009.
The Office of Administrative Law on October 5, 2009.
The U.S. Environmental Protection Agency on October 15, 2009.

The effective date of this TMDL is: October 15, 2009.

The elements of the TMDL are presented in Table 7-7.1 and the Implementation Plan in Table 7-7.2

Table 7-7.1. Calleguas Creek Nitrogen Compounds and Related Effects TMDL: Elements

Element	Calleguas Creek Nitrogen Compound and Related Effects
Problem Statement	Elevated nitrogen concentrations (ammonia, nitrite and nitrate) are causing impairments of the warm water fish and wildlife habitat, and groundwater recharge beneficial uses of Calleguas Creek. Nitrite and nitrate contribute to eutrophic effects such as low dissolved oxygen and algae growth. Ammonia contributes to toxicity.

Element	Calleguas Creek Nitrogen Compound and Related Effects
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	Numeric targets for this TMDL are listed as follows: 1. Total Ammonia as Nitrogen (NH_3-N) *NH_3-N concentration (mg/L)* *Reach* — *One-hour average* — *Thirty-day average* • Mugu Lagoon — 8.1 — 2.9 • Calleguas Creek, South — 5.5 — 2.4 • Calleguas Creek, North — 8.4 — 3.0 • Revlon Slough — 5.7 — 2.9 • Beardsley Channel — 5.7 — 2.9 • Arroyo Las Posas — 8.1 — 2.6 • Arroyo Simi — 4.7 — 2.4 • Tapo Canyon — 3.9 — 1.9 • Conejo Creek (Confluence with Calleguas Creek to Santa Rosa Rd.) — 9.5 — 3.5 • Conejo Creek (Santa Rosa Road to Thousand Oaks City Limit) — 8.4 — 3.4 • Conejo Creek, Hill Canyon Reach — 8.4 — 3.1 • Conejo Creek, North Fork — 3.2 — 1.7 • Arroyo Conejo (South Fork Conejo Creek) — 5.1 — 3.4 • Arroyo Santa Rosa — 5.7 — 2.4 2. Nitrate and nitrite as nitrogen (NO_3-N and NO_2-N) *Constituent* — *Concentration (mg/L)* • NO_3-N — 10 • NO_2-N — 1 • NO_3-N + NO_2-N — 10 Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitat are intended to implement the narrative objectives and may be revised based on the results of monitoring and special studies conducted pursuant to the implementation plan.
Source Analysis	The principal sources of nitrogen into Calleguas Creek are discharges from the POTWs in the watershed and runoff from agricultural activities in the watershed.
Linkage Analysis	Linkage between nitrogen sources and the in-stream water quality was established through a mass continuity model based on an evaluation of recent hydrodynamic and water quality data.

<table>
<tr><th>Element</th><th>Calleguas Creek Nitrogen Compound and Related Effects</th></tr>
<tr><td>Waste Load Allocations (for point sources)</td><td>The waste load allocations (WLAs) are as follows:
<table>
<tr><th rowspan="2">POTWs</th><th colspan="3">NH_3-N</th><th rowspan="2">NO_3-N (mg/L)</th><th rowspan="2">NO_2-N (mg/L)</th><th rowspan="2">NO_3-N + NO_2-N (mg/L)</th></tr>
<tr><th>MDEL[1] (mg/L)</th><th>AMEL[2] (mg/L)</th><th>Daily WLA[3] (lbs/day)</th></tr>
<tr><td>Hill Canyon WTP[4]</td><td>5.6</td><td>3.1</td><td>5.1xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Simi Valley WQCF[5]</td><td>3.3</td><td>2.4</td><td>2.9xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Moorpark WTP</td><td>6.4</td><td>2.6</td><td>5.7xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Camarillo WRP[6]</td><td>7.8</td><td>3.5</td><td>7.0xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Camrosa WRF[7]</td><td>7.2</td><td>3.0</td><td>6.5xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
</table></td></tr>
<tr><td>Load Allocation (for non point sources)</td><td>The source analysis indicates that agricultural discharge is the major non-point source of oxidized nitrogen to Calleguas Creek and its tributaries. This source is particularly significant in Revolon Slough and other agricultural drains in the lower Calleguas watershed where there are no point sources of ammonia and oxidized nitrogen. Load allocations for non-point sources are:
<table>
<tr><th>Nonpoint Source</th><th>NO_3-N + NO_2-N (mg/L)</th></tr>
<tr><td>Agriculture</td><td>9.0</td></tr>
<tr><td>Other Nonpoint Source</td><td>9.0</td></tr>
</table></td></tr>
<tr><td>Implementation</td><td>1. Refer to Table 7-7.2
2. Several of the POTWs in the Calleguas Creek watershed will require additional time to meet the nitrogen (NO_3-N, NO_2-N, and NO_3-N + NO_2-N) waste load allocations. To allow time to meet the nitrogen waste load allocations, interim limits will be allowed for a period of four years from July 16, 2003 during which the POTWs will be required to meet the effluent limit for NO_3-N + NO_2-N only. Effluent limits for the individual compounds NO_3-N and NO_2-N are not required during the interim period.</td></tr>
</table>

Element	Calleguas Creek Nitrogen Compound and Related Effects
Implementation (continued)	*Interim Limits* for NO_3-N + NO_2-N* *POTWs* — *Monthly Average (mg/L)* — *Daily Maximum (mg/L)* • Hill Canyon WTP — 36.03 — 38.32 • Simi Valley WQCF — 31.60 — 32.17 • Moorpark WTP — 31.5 — 32.01 • Camarillo WRP — 36.23 — 37.75 *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported in the Calleguas Creek Characterization Study 3. The waste load allocations for ammonia will be applicable on July 16, 2003. Interim limits for ammonia will be applicable for no more than 2 years starting from October 24, 2002 for POTWs that are not able to achieve immediate compliance with the assigned waste load allocations. The interim limits for ammonia may be established at the discretion of the Regional Board when a POTW's NPDES permit is reissued.
Margin of Safety	An implicit margin of safety is incorporated through conservative model assumptions and statistical analysis. In addition, an explicit margin of safety is incorporated by reserving 10% of the load, calculated on a concentration basis, from allocation to POTW effluent sources.
Seasonal Variations and Critical Conditions	A low flow critical condition is identified for this TMDL based on a review of flow data for the past twenty years. This flow condition was identified because less assimilative capacity is available to dilute effluent discharge.

1 Maximum daily effluent limitation
2 Average monthly effluent limitation
3 Q represents the POTW effluent flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the effluent flow.
4 Wastewater Treatment Plant
5 Water Quality Control Facility
6 Water Reclamation Plant
7 Water Reclamation Facility

Table 7-7.2. Calleguas Creek Nitrogen Compounds and Related Effects TMDL Implementation Schedule

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
1. 2. 3.	WLA for ammonia apply to POTWs. Interim Limits for NO_3-N + NO_2-N apply to POTWs. Formation of Nonpoint Source BMP Evaluation Committee.	July 16, 2003
4. 5.	Submittal of Non point Source Monitoring Workplan by Calleguas Creek Watershed Management Plan – Water Resources/Water Quality (CCWMP) Subcommittee. This monitoring is to evaluate nutrient loadings associated with agricultural drainage and other nonpoint sources. The monitoring program will include both dry and wet weather discharges from agricultural, urban and open space sources. In addition, groundwater discharge to Calleguas Creek will also be analyzed for nutrients to determine the magnitude of these loading and the need for load allocations. A key objective of these special studies will be to determine the effectiveness of agricultural BMPs in reducing nutrient loadings. Consequently, flow and analytical data for nutrients will be required to estimate loadings from nonpoint sources. Submittal of Watershed Monitoring Workplan by CCWMP Subcommittee. In addition to the analytical parameters and flow data requirements, the watershed monitoring program will establish sampling locations from which representative samples can be obtained, including all listed tributaries. Monitoring results will be compared to the numeric instream targets identified in this TMDL to determine the effectiveness of the TMDL. Data on the extent and distribution of algal mats, scum and odors will be included in the watershed monitoring program. The data will be used to provide further verification of the model and refine the TMDL to address nutrient effects as appropriate.	July 16, 2004

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
6.	Submittal of Special Studies Workplan by CCWMP Subcommittee. These special studies include: Monitoring of minor point sources for nutrients to confirm assumptions that the loadings from these sources are minor; Monitoring of greenhouse discharges and runoff to assess loadings from these sources; Monitoring of groundwater extraction and discharges in the Arroyo Santa Rosa subwatershed and other areas that may add significant nutrient loadings to Calleguas Creek; and Additional studies of the type and extent of algae impairment in Calleguas Creek and Mugu Lagoon.	July 16, 2004
7. 8. 9.	Complete Special Studies for minor sources, greenhouses, and groundwater loadings. Completion of ammonia Water Effect Ratio (WER) studies. Complete planning and preparation for construction of TMDL remedies to reduce non-point source nitrogen loads.	July 16, 2006
10.	Interim Limits for NO_3-N + NO_2-N expire and WLAs for NO_3-N, NO_2-N, NO_3-N + NO_2-N apply to POTWs.	July 16, 2007
11.	Complete Special Studies for algae impairments of Calleguas Creek, its tributaries and Mugu Lagoon.	July 16, 2008
12.	Regional Board consideration of revised water quality objectives for nitrogen compounds based on monitoring data, special studies, and ammonia WER, if appropriate.	July 16, 2009
13.	Final achievement of ammonia and oxidized nitrogen standards.	July 16, 2010

* The CCWMP Subcommittee has offered to complete tasks 4 through 9 and 11. In the event the CCWMP Subcommittee fails to timely complete these tasks, the Regional Board will consider whether to amend this Implementation Plan to assign tasks to responsible dischargers in the regulatory approach. The Regional Board also reserves its right to take any other appropriate actions including, but not limited to, exercising its authorities under Water Code section 13267.

7-8 Los Angeles River Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on July 10, 2003.

This TMDL was approved by:
The State Water Resources Control Board on November 19, 2003.
The Office of Administrative Law on February 27, 2004.
The U.S. Environmental Protection Agency on March 18, 2004.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on December 4, 2003.

This amended TMDL was approved by:
The State Water Resources Control Board on March 24, 2004.
The Office of Administrative Law on September 27, 2004.
[U.S. Environmental Protection Agency approval not required for amendment to Implementation Plan]

The effective date of this TMDL is: September 27, 2004.

Table 7-8.1. Los Angeles River Nitrogen Compounds and Related Effects TMDL: Elements

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Problem Statement	Reaches of the Los Angeles River and its tributaries were listed as impaired for nitrogen compounds (ammonia, nitrate, and nitrate) and related effects such as algae, pH, odor, and scum on the 2002 303(d) list. These reaches were listed because numeric and narrative water quality objectives for nitrogen compounds and related effects were exceeded, thereby impairing warm, freshwater, and wildlife habitats, and recreation beneficial uses.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the load allocations)*	Numeric targets for this TMDL are listed as follows: a) Total ammonia as nitrogen (NH_3-N) Numeric targets are dependent on temperature and pH of receiving water. Based on the last three years of temperature and pH data, the ammonia numeric targets for receiving waters correspondent to major discharge points are provided below: ***Receiving water correspondent to major discharge point*** ***One-hour average*** ***Thirty-day average*** Los Angeles River Reach 5 (within Sepulveda Basin) - Donald C. Tillman WRP 4.7 mg/L 1.6 mg/L Los Angeles River Reach 3 (Riverside Dr. to Figueroa St.) - Los Angeles/ Glendale WRP 8.7 mg/L 2.4 mg/L Burbank Western Channel - Burbank WRP 10.1 mg/L 2.3 mg/L b) Nitrate-nitrogen and nitrite-nitrogen ***Constituent*** ***Thirty-day average*** Nitrate-nitrogen (NO_3-N) 8 mg/L Nitrite-nitrogen (NO_2-N) 1 mg/L Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N) 8 mg/L Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitats are intended to implement the narrative objectives and may be revised based on the results of monitoring and studies conducted pursuant to the implementation plan.
Source Analysis	The principal source of nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman Water Reclamation Plant (WRP), the Los Angeles-Glendale WRP, and the Burbank WRP. During dry weather period, the major POTWs contribute 84.1% of the total dry weather nitrogen load. Urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Linkage Analysis	Linkage between nutrient sources and the instream water quality was established through hydrodynamic and water quality models. The Environmental Fluid Dynamics Code 1-D was used to model the hydrodynamic characteristics of the Los Angeles River and the Water Quality Analysis Simulation Program was used to model water quality. Additional studies were conducted to develop the residence time and determine the nutrient uptake rates by algae.
Wasteload Allocations (for point sources)	1. Major point sources: a) Total ammonia as nitrogen (NH_3-N): ***POTW*** ***One-hour average WLA*** ***Thirty-day average WLA*** Donald C. Tillman WRP 4.2 mg/L 1.4 mg/L Los Angeles-Glendale WRP 7.8 mg/L 2.2 mg/L Burbank WRP 9.1 mg/L 2.1 mg/L b) Nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), and Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N): ***Constituent*** ***Thirty-day average WLA**** NO_3-N 7.2 mg/L NO_2-N 0.9 mg/L NO_3-N + NO_2-N 7.2 mg/L *Receiving water monitoring is required on a weekly basis to ensure compliance with the water quality objective.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Waste Load Allocations (for point sources) (continued)	2. Minor point sources: Waste loads are allocated to minor point sources enrolled under NPDES or WDR permits including but not limited to Tapia WRP, Whittier Narrows WRP, Los Angeles Zoo WRP, industrial and construction stormwater, and municipal storm water and urban runoff from municipal separate storm sewer systems (MS4s): a) Ammonia wasteload allocations (WLAs) for minor point sources are listed below by receiving waters: ***Water Body*** ***One-hour average WLA*** ***Thirty-day average WLA*** Los Angeles River above Los Angeles-Glendale WRP (LAG) 4.7 mg/L 1.6 mg/L Los Angeles River below LAG 8.7 mg/L 2.4 mg/L Los AngelesTributaries 10.1 mg/L 2.3 mg/L b) WLAs for nitrate-nitrogen, nitrite-nitrogen, and nitrate-nitrogen plus nitrite-nitrogen for minor discharges are listed below: ***Constituent*** ***Thirty-day average WLA*** NO_3-N 8.0 mg/L NO_2-N 1.0 mg/L NO_3-N + NO_2-N 8.0 mg/L
Load Allocation *(for nonpoint sources)*	The Source Assessment indicates that nitrogen loads from nonpoint sources are negligible compared to loading from point sources and their contribution is adequately accounted for in the margin of safety. Consequently, load allocations will not be developed unless it is determined they are necessary after load reductions are effected through implementation of the wasteload allocations. Additional monitoring is included in the implementation plan to verify the nitrogen nonpoint source contributions.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Implementation	1. Refer to Table 7-8.2 2. The Implementation Plan includes upgrades to the WRPs discharging to Los Angeles River for removal of ammonia, nitrate, and nitrite. At the discretion of the Regional Board, the following interim limits for ammonia, and nitrate plus nitrite will be allowed for major point sources for a period not to exceed 3.5 years from March 23, 2004. Effluent limits for the individual compounds NO3-N, and NO2-N are not required during the interim period. ***Interim Limits for NH3-N and NO3-N + NO2-N*** ***Total ammonia as Nitrogen*** ***POTW*** ***Daily Maximum**** ***Monthly Average**** Donald C. Tillman WRP 24.7 mg/L 20.5 mg/L Los Angeles-Glendale WRP 24.2 mg/L 18.8 mg/L Burbank WRP 24.1 mg/L 22.7 mg/L *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported by dischargers. ***Nitrite-nitrogen + Nitrate-nitrogen*** ***Monthly Average*** 8.0 mg/L The Implementation Plan also includes additional studies to evaluate the effectiveness of nitrogen reductions on related effects such as algae growth, odors and scum. Ammonia and nitrate reductions will be regulated through effluent limits prescribed in NPDES permits.
Margin of Safety	An explicit margin of safety of 10% of the ammonia, nitrate, nitrite and nitrate + nitrite loads is allocated to address uncertainty in the sources and linkage analyses. In addition, an implicit margin of safety is incorporated through conservative model assumptions and statistical analysis.
Seasonal Variations and Critical Conditions	The critical condition identified for this TMDL is based on low flow condition. The driest six months of the year are the most critical condition for nutrients because less surface flow is available to dilute effluent discharge.

Table 7-8.2. Los Angeles River Nitrogen Compounds and Related Effects TMDL: Implementation Schedule

Implementation Tasks	Completion Date
1. Apply interim limits for NH_3-N and NO_3-N + NO_2-N to major Publicly Owned Treatment Works (POTWs). 2. Apply Waste Load Allocations (WLAs) to minor point source dischargers and MS4 permittees. 3. Begin to include monitoring for nitrogen compounds in NPDES permits for minor NPDES dischargers above 0.1 mgd as permits are renewed.	03/23/2004
4. Submittal of a Monitoring Work Plan by MS4 permittees to estimate nitrogen loadings associated with runoff loads from the storm drain system for approval by the Executive Officer of the Regional Board. The Work Plan will include monitoring for ammonia, nitrate, and nitrite. The Work Plan may include a phased approach wherein the first phase is based on monitoring from the existing mass emission station in the Los Angeles River. The results will be used to calibrate the linkage analysis. The Work Plan will also contain protocol and a schedule for implementing additional monitoring if necessary. The Work Plan will also propose triggers for conducting source identification and implementing BMPs, if necessary. Source identification and BMPs will be in accordance with the requirements of MS4 permits.	03/23/2005
5. Submittal of a Workplan by major NPDES permittees to evaluate the effectiveness of nitrogen reductions on removing impairments from algae odors, scums, and pH for approval by the Executive Officer of the Regional Board. The monitoring program will include instream monitoring of algae, foam, scum, pH, and odors in the Los Angeles River. In addition, groundwater discharge to Los Angeles River will also be analyzed for nutrients to determine the magnitude of these loadings and the need for load allocations. The Workplan will include protocol and schedule for refining numeric targets for nitrogen compounds and related effects such as excessive algae in the Los Angeles River. The Workplan will also contain protocol and a schedule for identification of limiting nutrients.	03/23/2005
6. Submission of a special studies Workplan by the City of Los Angeles to evaluate site-specific objectives for ammonia, nitrate, and nitrite, including the following issues: pH and temperature distribution downstream of the D.C. Tillman WRP to determine the point of compliance for ammonia, establishment of ammonia WLAs based on seasonality.	03/23/2005
7. Submission of all results from Task 6, and results from water effects ratio study for ammonia which has been performed by the City of Los Angeles.	No later than 09/23/2006

Implementation Tasks	Completion Date
8. Regional Board considers site-specific objectives for ammonia, nitrate, nitrite and nitrite + nitrate and revision of wasteload allocations based on results from Tasks 6 and 7. The Regional Board will consider factors such as seasonal variation, averaging periods, and water effects ratios when determining whether it is appropriate to adopt site-specific objectives for ammonia. If a site specific objective is adopted by the Regional Board, and approved by relevant approving agencies, this TMDL will need to be revised, readopted, and reapproved to reflect the revised water quality objectives.	No later than 09/23/2007
9. Interim limits for ammonia and nitrate + nitrite expire and WLAs for ammonia, nitrate, nitrite, and nitrate + nitrite apply to major point sources.	09/23/2007
10. Complete evaluation of monitoring for nutrient effects and determine need for revising wasteload allocations, including but not limited to establishing new WLAs for other nutrient and related effects such as algal growth	03/23/2008
11. Regional Board considers results of Tasks 5 and 10 and revises or establishes WLAs as appropriate.	03/23/2009

7-9 Santa Clara River Nitrogen Compounds TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on August 7, 2003.

This TMDL was approved by:

The State Water Resources Control Board on November 19, 2003.
The Office of Administrative Law on February 27, 2004.
The U.S. Environmental Protection Agency on March 18, 2004.

The effective date of this TMDL is: March 23, 2004.

The following table describes the key elements of this TMDL.

Table 7-9.1. Santa Clara River Nitrogen Compounds TMDL: Elements

Element	Santa Clara River Nitrogen Compounds TMDL
Problem Statement	Discharge of wastes containing nitrite, nitrate and ammonia to the Santa Clara River causes exceedances of water quality objectives for ammonia, nitrate and nitrite established in the Basin Plan. The Santa Clara River is listed as impaired by ammonia in Reach 3 and by nitrate plus nitrite in Reach 7 on the 2002 303(d) list of impaired water bodies. Reach 8 of the Santa Clara River is included on the State Monitoring List for organic enrichment/dissolved oxygen, which may be caused by excessive nitrogen. Nitrate and nitrate are biostimulatory substances that can cause eutrophic effects such as low dissolved oxygen and algae growth. Excessive ammonia can cause aquatic life toxicity.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	• Total ammonia as nitrogen (NH_3-N) Reach / One-hour Average (mg/L) / Thirty-day Average (mg/L) Reach 8 / 14.8 / 3.2 Reach 7 above Valencia / 4.8 / 2.0 Reach 7 below Valencia / 5.5 / 2.0 Reach 7 at County Line / 3.4 / 1.2 Reach 3 above Santa Paula / 2.4 / 1.9 Reach 3 at Santa Paula / 2.4 / 1.9 Reach 3 below Santa Paula / 2.2 / 1.7 • Nitrate plus Nitrite as Nitrogen (NO_3-N + NO_2-N) Reach / Thirty-day Average (mg/L) Reach 3 / 4.5 Reach 7 / 4.5 Reach 8 / 9.0 Narrative objectives for biostimulatory substances and toxicity are based on the Basin Plan. The TMDL analysis indicates that the numeric targets will implement the narrative objectives. The Implementation Plan includes monitoring and special studies to verify that the TMDL will implement the narrative objectives.

Element	Santa Clara River Nitrogen Compounds TMDL
Source Analysis	The principal source of ammonia, nitrite, and nitrate to the Santa Clara River is discharges from the Saugus and Valencia Water Reclamation Plants (WRPs) and the Fillmore and Santa Paula Publicly Owned Treatment Works (POTWs). Agricultural runoff, stormwater discharge and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.
Linkage Analysis	Linkage between nitrogen sources and the in-stream water quality was established through hydrodynamic and water quality models. The Watershed Analysis Risk Management Framework was used to model the hydrodynamic characteristics and water quality of the Santa Clara River. The analysis demonstrated that major point sources (WRPs and POTWs) were the primary contributors to in-stream ammonia and nitrate plus nitrite loads. Nonpoint sources and minor point sources contributed a much smaller fraction of these loads.
Wasteload Allocations (for point sources)	Major point sources: Concentration-based wasteloads are allocated to major point sources of ammonia and nitrate+nitrite in Reach 3, which include the Fillmore and Santa Paula POTWs; concentration-based wasteloads are allocated to major point sources of ammonia and nitrite+nitrate in Reaches 7 and 8, which include the Valencia and Saugus WRPs. • Total ammonia as nitrogen (NH_3-N) in mg/L: POTW / One-hour average / Thirty-day average Saugus WRP / 5.6 / 2.0 Valencia WRP / 5.2 / 1.75 Fillmore POTW / 4.2 / 2.0 Santa Paula POTW / 4.2 / 2.0 • Nitrate-nitrogen (NO_3-N), Nitrite-nitrogen (NO_2-N), and Nitrate plus Nitrite as nitrogen (NO2-N+NO3-N) in mg/L: Thirty-day average WLA* POTW / NO_2-N / NO_3-N / NO2-N+NO3-N Saugus WRP / 0.9 / 7.1 / 7.1 Valencia WRP / 0.9 / 6.8 / 6.8 Fillmore POTW / 0.9 / 8.0 / 8.0 Santa Paula POTW / 0.9 / 8.0 / 8.0 *Receiving water monitoring is required on a weekly basis to ensure compliance with the water quality objectives for nitrite, nitrate, nitrite + nitrate, and dissolved oxygen.

Element	Santa Clara River Nitrogen Compounds TMDL
Wasteload Allocations (for point sources) (continued)	<u>Minor Point Sources</u>: Concentration-based wasteloads are allocated to minor discharges enrolled under NPDES or WDR permits. The allocations for minor point sources are based on the water quality objectives for ammonia, nitrite, nitrate and nitrite plus nitrate. For minor dischargers discharging into Reach 7, the thirty-day average WLA for ammonia as nitrogen is 1.75 mg/L, the one-hour WLA for ammonia as nitrogen is 5.2 mg/L, and the thirty-day average WLA for nitrate plus nitrite as nitrogen is 6.8 mg/L. For minor dischargers discharging into Reach 3, the thirty-day average WLA for ammonia as nitrogen is 2.0 mg/L and the one hour average WLA for ammonia as nitrogen is 4.2 mg/L, and the thirty-day average WLA for nitrate plus nitrite as nitrogen is 8.1 mg/L. <u>MS4 and Stormwater Sources</u>: Concentration-based wasteloads are allocated to municipal, industrial and construction stormwater sources regulated under NPDES permits. For stormwater permittees discharging into Reach 7, the thirty-day WLA for ammonia as nitrogen is 1.75 mg/L and the one-hour WLA for ammonia as nitrogen is 5.2 mg/L; the thirty-day average WLA for nitrate plus nitrite as nitrogen is 6.8 mg/L. For stormwater permittees discharging into Reach 3, the thirty-day WLA for ammonia as nitrogen is 2.0 mg/L and the one-hour WLA for ammonia as nitrogen is 4.2 mg/L; the thirty-day average WLA for nitrate plus nitrite nitrogen is 8.1 mg/L.
Load Allocation (for nonpoint sources)	Concentration-based loads for nitrogen compounds are allocated for nonpoint sources. For nonpoint sources discharging to Reach 7, the combined ammonia, nitrate, nitrite (NH_3-N + NO_2-N + NO_3-N) load as nitrogen is 8.5 mg/L. For non-point sources discharging into other reaches of the Santa Clara River, Mint Canyon Reach 1, Wheeler Canyon/Todd Barranca, and Brown Barranca/Long Canyon, the combined ammonia, nitrate, nitrite (NH_3-N + NO_2-N + NO_3-N) loads as nitrogen is 10 mg/L. Monitoring is established in the TMDL Implementation Plan to verify the nitrogen nonpoint source contributions from agricultural and urban runoff and groundwater discharge.

<table>
<tr><th>Element</th><th>Santa Clara River Nitrogen Compounds TMDL</th></tr>
<tr><td>Implementation</td><td>

Ammonia, nitrite, and nitrate reductions will be regulated through effluent limits prescribed in POTW and minor point source NPDES Permits, Best Management Practices required in NPDES MS4 Permits, and SWRCB Management Measures for non point source discharges.
At the Regional Board’s discretion, the following interim effluent limits will be allowed for a period as short as possible, but not to exceed eight years from the effective date of the TMDL:

<u>Interim Limits in mg/L for Nitrite, Nitrate, and Nitrite plus Nitrate as nitrogen</u>

<table>
<tr><th></th><th colspan="3">Thirty-day Average Interim Limits</th></tr>
<tr><th>POTW</th><th>NO_2-N</th><th>NO_3-N</th><th>NO_2-N + NO_3-N</th></tr>
<tr><td>Saugus WRP</td><td>1</td><td>10</td><td>10</td></tr>
<tr><td>Valencia WRP</td><td>1</td><td>10</td><td>10</td></tr>
</table>

<u>Interim Limits in mg/L for combined Ammonia, Nitrate, and Nitrite as nitrogen</u>

<table>
<tr><th>POTW</th><th>Thirty-day Average</th><th>Daily Maximum</th></tr>
<tr><td>Fillmore WRP</td><td>32.8</td><td>38.9</td></tr>
<tr><td>Santa Paula WRP</td><td>41.8</td><td>49.0</td></tr>
</table>

The Implementation Plan also includes special studies and monitoring for ammonia, nitrite, and nitrate to evaluate the effectiveness of nitrogen reductions.

The Implementation Plan also includes special studies to address issues regarding water quality standards and site-specific objectives and a reconsideration of waste load allocations based on monitoring data and special studies.
</td></tr>
<tr><td>Margin of Safety</td><td>An explicit margin of safety of 10 percent of the nitrogen loads is allocated to address uncertainty in the source and linkage analyses. In addition, an implicit margin of safety is incorporated through conservative model assumptions and statistical analysis.</td></tr>
<tr><td>Future Growth</td><td>Urban growth in the upper watershed is predicted to require the expansion of the Valencia Water Reclamation Plan, construction of an additional water reclamation plant, and increased use of reclaimed water. Wasteload and load allocations will be developed for these new sources as required to implement appropriate water quality objectives for ammonia, nitrite, and nitrate.</td></tr>
<tr><td>Seasonal Variations and Critical Conditions</td><td>The critical condition identified for this TMDL is based on the low flow condition defined as the 7Q10. In addition, the driest six months of the year are identified as a more critical condition for nitrogen compounds because less surface flow is available to dilute effluent discharge. The model result also indicates a critical condition during the first major storm event after a dry period. The implementation plan includes monitoring to verify this potential critical condition.</td></tr>
</table>

Table 7-9.2. Santa Clara River Nitrogen Compounds TMDL: Implementation Schedule

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
1. Apply interim limits for ammonia, nitrite, and nitrate to Fillmore and Santa Paula POTWs. 2. Apply interim limits for Nitrate to Saugus and Valencia WRPs. 3. Apply WLAs to minor point source dischargers and MS4 permittees. 4. Include monitoring for nitrogen compounds in NPDES and WDR permits for minor dischargers as permits are renewed.	Fillmore and Santa Paula POTWs; NPDES and WDR permittees	Effective Date of TMDL
5. Submittal of a Work Plan by Los Angeles County and Ventura County MS4 permittees to estimate ammonia and nitrogen loadings associated with runoff loads from the storm drain system for approval by the Executive Officer of the Regional Board. The Work Plan will include monitoring for ammonia, nitrate, and nitrite. The Work Plan may include a phased approach wherein the first phase is based on monitoring from the existing mass emission station in the Santa Clara River. If the monitoring studies reflect a higher average concentration in stormwater than originally considered, then the linkage analysis would be refined to consider the increased loading. The Work Plan will also contain protocol and a schedule for implementing additional monitoring if necessary. The Work Plan will also propose triggers for conducting source identification and implementing BMPs, if necessary. Source identification and BMPs will be in accordance with the requirements of MS4 permits.	Los Angeles and Ventura Counties MS4 Permittees	1 year after the Effective Date of TMDL
6. Submittal of Work Plan by major NPDES permittees to asses and monitor the surface water quality, including, without limitation, monthly measurement of dissolved oxygen on an hourly basis, pH and instream denitrification processes, and groundwater where appropriate, for aquatic life impacts, macroinvertebrate diversity, algal mass, and nutrient species in the Santa Clara River for approval by the Regional Board's Executive Officer. The Work Plan will include evaluation of the effectiveness of the POTW in meeting WLAs. Submittal of a work plan that demonstrates compliance with final wasteload allocations or demonstrates a schedule for compliance with final wasteload allocations is as short as possible.	Cities of Fillmore and Santa Paula, and County Sanitation Districts of Los Angeles County	1 year after Effective Date of TMDL

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
7. Submittal of special studies Work Plan by County Sanitation Districts of Los Angeles County to evaluate site-specific objectives (SSOs) for nitrate for approval by the Regional Board's Executive Officer.	County Sanitation Districts of Los Angeles County	1 year after Effective Date of TMDL
8. Submittal of results from water effects ratio study for ammonia by County Sanitation Districts of Los Angeles County.	County Sanitation Districts of Los Angeles County	Effective Date of TMDL
9. Evaluation of feasibility of including stakeholders in the Upper Santa Clara River watershed in the Regional Board Septic Tank task force.	Regional Board	3.5 year after Effective Date of TMDL
10. Regional Board considers a Basin Plan Amendment for site-specific objectives for ammonia, nitrate and nitrite plus nitrate based on results of Tasks 7 and 8.	Regional Board	1 year after Effective Date of TMDL for ammonia; 4 years after the Effective Date of the TMDL for nitrate and nitrite plus nitrate
11. Based on the results Task 5-10 and NPDES Monitoring, complete implementation of advanced treatment or additional treatment modifications to achieve WLAs for POTWs, if necessary in as short a period of time as possible, as determined during NPDES permit issuance or modification, but not later than eight years after the effective date of the TMDL; if advanced treatment is not required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit reissuance or modification, no later than five years after the effective date of the TMDL. The wasteload allocation compliance date will be synchronized with the expiration date of interim limits specified in Task 13.	POTW Permittees	8 years after Effective Date of TMDL

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
12. Interim limits for ammonia and nitrate expire and WLAs apply to WRPs and POTWs. The Regional Board will consider extending the duration of the remaining schedule and re-evaluating interim limits if WLAs for WRPs and POTWs are reduced after SSO considerations.	POTW Permittees; Regional Board	Based on results of Tasks 6 and 10: if additional modifications or advanced nitrification/denitrification facilities are required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit issuance or modification interim limits, but not later than eight years after the effective date of the TMDL; if advanced treatment is not required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit issuance or modification, but not later than 5 years after the Effective Date of the TMDL.
13. Annual progress reports on the Implementation Plan shall be provided to the Regional Board by the responsible parties or their representatives.	•NPDES permitees, •Board staff •MS-4 permittees. •Newhall Land and Farming •United Water Conservation District •Friends of the Santa Clara River • Ventura Coast Keeper and Heal the Bay.	Annually after Effective Date of TMDL.

7-10 Malibu Creek and Lagoon Bacteria TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on December 13, 2004.

This TMDL was approved by:

The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on December 1, 2005.
The U.S. Environmental Protection Agency on January 10, 2006.

The effective date of this TMDL is: January 24, 2006.

The following table includes the elements of this TMDL.

Table 7-10.1. Malibu Creek and Lagoon Bacteria TMDL: Elements

TMDL Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Malibu Creek, Lagoon, and adjacent beach. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine and fresh water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: In Marine Waters Designated for Water Contact Recreation (REC-1) <u>1. Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

TMDL Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	In Fresh Waters Designated for Water Contact Recreation (REC-1) 1. Geometric Mean Limits a. E. coli density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. E. coli density shall not exceed 235/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the point at which the effluent from a discharge initially mixes with the receiving water. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)
Source Analysis	Fecal coliform bacteria may be introduced from a variety of sources including storm water runoff, dry-weather runoff, onsite wastewater treatment systems, and animal wastes. An inventory of possible point and nonpoint sources of fecal coliform bacteria to the waterbody was compiled, and both simple methods and computer modeling were used to estimate bacteria loads for those sources. Source inventories were used in the analysis to identify all potential sources within the Malibu Creek watershed, modeling was used to identify the potential delivery of pathogens into the creeks and the lagoon.

TMDL Element	Key Findings and Regulatory Provisions
Loading Capacity	The loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains or other discharge initially mixes with the receiving water throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are expressed as the number of daily or weekly sample days that may exceed the single sample limits or 30-day geometric mean limits as identified under "Numeric Target." WLAs are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Zero days of exceedance are allowed for the 30-day geometric mean limits. The allowable days of exceedance for the single sample limits differ depending on season, dry weather or wet-weather, and by sampling locations as described in Table 7-10.2. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. However, existing data indicates that the number of exceedance days for all locations assessed in this TMDL were greater than the allowable exceedance days (i.e., number of exceedance days greater than the number at the reference sites). For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather (defined as days of 0.1 inch of rain or more plus three days following the rain event). The responsible jurisdictions and responsible agencies are the County of Los Angeles, County of Ventura, the cities of Malibu, Calabasas, Agoura Hills, Hidden Hills, Simi Valley, Westlake Village, and Thousand Oaks; Caltrans, and the California Department of Parks and Recreation.The responsible jurisdictions and responsible agencies include the permittees and co-permittees of the municipal storm water (MS4) permits for Los Angeles County and Ventura County, and Caltrans. The storm water permittees are individually responsible for the discharges from their municipal separate storm sewer systems to Malibu Creek, Malibu Lagoon or tributaries thereto.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The California Department of Parks and Recreation (State Parks), as the owner of the Malibu Lagoon and Malibu Creek State Park, is the responsible agency for these properties. However, since the reference watershed approach used in developing this TMDL is intended to make allowances for natural sources, State Parks is only responsible for: conducting a study of bacteria loadings from birds in the Malibu Lagoon, water quality monitoring, and compliance with load allocations applicable to anthropogenic sources on State Park property (e.g., onsite wastewater treatment systems). The Santa Monica Mountains Conservancy and the National Park Service as the owner of natural parkland also are responsible for water quality monitoring and compliance with load allocations resulting from anthropogenic sources (e.g.,onsite wastewater treatment systems) from lands under their jurisdiction. As discussed in "Source Analysis", discharges from Tapia WWRF and effluent irrigation, and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean.
Load Allocations (for nonpoint sources)	Load Allocations (LA) are expressed as the number of daily or weekly sample days that may exceed the single sample limits or 30-day geometric mean limits as identified under "Numeric Target." LAs are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Zero days of exceedance are allowed for the 30-day geometric mean limits. The allowable days of exceedance for the single sample limits differ depending on season, dry weather or wet-weather, and by sampling locations as described in Table 7-10.2. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. However, existing data indicates that the number of exceedance days for all locations assessed in this TMDL were greater than the allowable exceedance days. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather (defined as days of 0.1 inch of rain or more plus three days following the rain event). Onsite wastewater treatment systems were identified as the major nonpoint anthropogenic source within the watershed. The responsible agencies are the county and city health departments and/or other local agencies that oversee installation and operation of on-site wastewater treatment systems. However, owners of on-site wastewater treatment systems are responsible for actual discharges.

TMDL Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms to implement the TMDL may include, but are not limited to the Los Angeles County Municipal Storm Water NPDES Permit (MS4), Ventura County Municipal Storm Water NPDES Permit, the Caltrans Storm Water Permit, waste discharge requirements (WDRs), MOUs, revised MOUs, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13225, 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. This TMDL will be implemented in three phases over a ten-year period as outlined in Table 7-10.3. Within three years of the effective date of the TMDL, compliance with the allowable number of summer dry-weather exceedance days and the rolling 30-day geometric mean targets must be achieved. In response to a written request from the responsible jurisdiction or responsible agency subject to conditions described in Table 7-10.3, the Executive Officer of the Regional Board may extend the compliance date for the summer dry-weather allocations from 3 to up to six years from the effective date of this TMDL Within six years of the effective date of the TMDL, compliance with the allowable number of winter dry-weather exceedance days and the rolling 30-day geometric mean targets must be achieved.Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved. To be consistent with the Santa Monica Bay (SMB) Beaches TMDLs, the Regional Board intends to reconsider this TMDL in coordination with the reconsideration of the SMB Beaches TMDLs. The SMB Beaches TMDLs are scheduled to be reviewed in July 2007 (four years from the effective date of the SMB Beaches TMDLs). The review will include a possible revision to the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; and to re-evaluate the reference year used in the calculation of allowable exceedance days. In addition, the method for applying the 30-day geometric mean limit also will be reviewed. The Malibu Creek Bacteria TMDL is scheduled to be reconsidered in three years from the effective date, which is expected to approximately coincide with the reassessment required under the SMB Beaches TMDLs.
Margin of Safety	A margin of safety has been implicitly included through the following conservative assumptions. • The watershed loadings were based on the 90th percentile year for rain (1993) based on the number of wet weather days. This should provide conservatively high runoff from different land uses for sources of storm water loads • The watershed loadings were also based on a very dry rain year (1994). This ensures compliance with the numeric target during low flows when septic systems and dry urban runoff loads are the major bacterial sources.

TMDL Element	Key Findings and Regulatory Provisions
Margin of Safety (continued)	• The TMDL was based on meeting the fecal 30-day geometric mean target of 200 MPN/ 100 ml, which for these watersheds was estimated to be more stringent level than the allowable exceedance of the single sample standard. This approach also provides assurance that the E. coli single sample standard will not be exceed. • The load reductions established in this TMDL were based on reduction required during the two different critical year conditions. A wet year when storm loads are high, and a more typical dry year when base flows and assimilative capacity is low. This adds a margin of safety for more typical years. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. To establish the critical condition for the wet days, we used rain data from 1993. Based on data from the Regional Board's Santa Monica Bay TMDL this represents the 90th percentile rain year based on rain data from 1947 to 2000. To further evaluate the critical conditions, we modeled a representative dry year. The dry-year critical condition was based on 1994, which was the 50th percentile year in terms of dry weather days for the period of 1947-2000.
Compliance Monitoring	Responsible jurisdictions and agencies shall submit a compliance monitoring plan to the Executive Officer of the Regional Board for approval. The compliance monitoring plan shall specify sampling frequency (daily or weekly) and sampling locations and that will serve as compliance points. This compliance monitoring program is to determine the effectiveness of the TMDL and not to determine compliance with individual load or wasteload allocations for purposes of enforcement. If the number of exceedance days is greater than the allowable number of exceedance days the water body segment shall be considered out-of-compliance with the TMDL. Responsible jurisdictions or agencies shall not be required to initiate an investigation detailed in the next paragraph if a demonstration is made that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code section 13267, daily sampling at the downstream location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a creek location is out of compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling in the target receiving waterbody reach or at the existing monitoring location until all single sample events meet bacteria water quality objectives.

TMDL Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	The County of Los Angeles, County of Ventura, and municipalities within the Malibu Creek watershed, Caltrans, and the California Department of Parks and Recreation are strongly encouraged to pool efforts and coordinate with other appropriate monitoring agencies in order to meet the challenges posed by this TMDL by developing cooperative compliance monitoring programs.

Note: The complete staff report for the TMDL is available for review upon request.

[1] The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

Table 7-10.2. Malibu Creek and Lagoon Bacteria TMDL: Final Annual Allowable Exceedance Days for Single Sample Limits by Sampling Location

Compliance Deadline		3* years after effective date		6 years after effective date		10 years after effective date	
		Summer Dry Weather ^		Winter Dry Weather ^**		Wet Weather ^**	
		April 1 – October 31		November 1 - March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
LA RWQCB	Triunfo Creek	0	0	3	1	17	3
LA RWQCB	Lower Las Virgenes Creek	0	0	3	1	17	3
LA RWQCB	Lower Medea Creek	0	0	3	1	17	3
LVMWD (R-9)	Upper Malibu Creek, above Las Virgenes Creek	0	0	3	1	17	3
LVMWD (R-2)	Middle Malibu Creek, below Tapia discharge 001	0	0	3	1	17	3
LVMWD (R-3)	Lower Malibu Creek, 3 mi below Tapia	0	0	3	1	17	3
LVMWD (R-4)	Malibu Lagoon, above PCH	0	0	3	1	17	3
LVMWD (R-11)	Malibu Lagoon, below PCH	0	0	3	1	17	3
------	Other sampling stations as identified in the Compliance Monitoring Plan as approved by the Executive Officer including at least one sampling station in each subwatershed, and areas where frequent REC-1 use is known to occur.	0	0	3	1	17	3

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.

The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station

The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.

^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.

* The compliance date may be extended by the Executive Officer to up to 6 years from the effective date.

* *A revision of the TMDL is scheduled for four years after the effective date of the Santa Monica Bay Beaches TMDLs in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from storm drains versus birds.

Table 7-10.3. Malibu Creek and Lagoon Bacteria TMDL: Significant Dates

Date	Action
120 days after the effective date of this TMDL	Responsible jurisdictions and responsible agencies must submit a comprehensive bacteria water quality monitoring plan for the Malibu Creek Watershed to the Executive Officer of the Regional Board. The plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. In developing the 13267 order, the EO will consider costs in relation to the need for data. With respect to benefits to be gained, the TMDL staff report demonstrates the significant impairment and bacteria loading. Further documenting success or failure in achieving waste load allocations will benefit the responsible agencies and all recreational water users. The purpose of the plan is to better characterize existing water quality as compared to water quality at the reference watershed,-and ultimately, to serve as a compliance monitoring plan. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan has established objectives including E. coli. For fresh water and enterococcus for marine water. The plan must also include sampling locations that are specified in Table 7-10.2, at least one location in each subwatershed, and areas where frequent REC-1 use is known to occur. However, this is not to imply that a mixing zone has been applied; water quality objectives apply throughout the watershed—not just at the sampling locations.
1 year after effective date of this TMDL	1. Responsible jurisdictions and responsible agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones. Specifically, the plan must include a comprehensive description of all steps to be taken to meet the 3-year summer dry weather compliance schedule, including but not limited to a detailed timeline for all category of bacteria sources under their jurisdictions including but not limited to nuisance flows, urban stormwater, on-site wastewater treatment systems, runoff from homeless encampments, horse facilities, and agricultural runoff.

Date	Action
1 year after effective date of this TMDL (continued)	2. If the responsible jurisdiction or agency is requesting an extension of the summer dry-weather compliance schedule, the plan must include a description of all local ordinances necessary to implement the detailed workplan and assurances that such ordinances have been adopted before the request for an extension is granted. 3. Local agencies regulating on-site wastewater treatment systems shall provide a written report to the Regional Board's Executive Officer detailing the rationale and criteria used to identify high-risk areas where on-site systems have a potential to impact surface waters in the Malibu Creek watershed. Local agencies may use the approaches outlined below in (a) and (b), or an alternative approach as approved by the Executive Officer. (a) Responsible agencies may screen for high-risk areas by establishing a monitoring program to determine if discharges from OWTS have impacted or are impacting water quality in Malibu Creek and/or its tributaries. A surface water monitoring program demonstration must include monitoring locations upstream and downstream of the discharge, as well as a location at mid-stream (or at the approximate point of discharge to the surface water) of single or clustered OWTS. Surface water sampling frequency will be weekly for bacteria indicators and monthly for nutrients. A successful demonstration will show no statistically significant increase in bacteria levels in the downstream sampling location(s). (b) Responsible agencies may define the boundaries of high-risk or contributing areas or identify individual OWTS that are contributing to bacteria water quality impairments through groundwater monitoring or through hydrogeologic modeling as described below: (1) Groundwater monitoring must include monitoring in a well no greater than 50-feet hydraulically downgradient from the furthermost extent of the disposal area, or property line of the discharger, whichever is less. At a minimum, sampling frequency for

Date	Action
1 year after effective date of this TMDL (continued)	groundwater monitoring will be quarterly. The number, location and construction details of all monitoring wells are subject to approval of the Executive Officer. (2) Responsible agencies may use a risk assessment approach, which uses hydrogeologic modeling to define the boundaries of the high-risk and contributing areas. A workplan for the risk assessment study must be approved by the Executive Officer of the Regional Board. 4. OWTS located in high-risk areas are subject to system upgrades as necessary to demonstrate compliance with applicable effluent limits and/or receiving water objectives. 5. If a responsible jurisdiction or agency is requesting an extension to the wet-weather compliance schedule, the plan must include a description of the integrated water resources (IRP) approach to be implemented, identification of potential markets for water re-use, an estimate of the percentage of collected stormwater that can be re-used, identification of new local ordinances that will be required, a description of new infrastructure required, a list of potential adverse environmental impacts that may result from the IRP, and a workplan and schedule with significant milestones identified. Compliance with the wet-weather allocations shall be as soon as possible but under no circumstances shall it exceed 10 years for non-integrated approaches or extend beyond July 15, 2021 for an integrated approach. The Regional Board staff will bring to the Regional Board the aforementioned plans for consideration of extension of the wet-weather compliance date as soon as possible.
2 years after the effective date of this TMDL	The California Department of Parks and Recreation shall provide the Regional Board Executive Officer, a report quantifying the bacteria loading from birds to the Malibu Lagoon. The Regional Board's Executive Officer shall require the responsible jurisdictions and responsible agencies to provide the Regional Board with a reference watershed study. The study shall be designed to collect sufficient information to establish a defensible reference condition for the Malibu Creek and Lagoon watershed.

Date	Action
3 years after effective date of this TMDL** ** May be extended to up to 6 years from the effective date of this TMDL	Achieve compliance with the applicable Load Allocations and Waste Load Allocations, as expressed in terms of allowable days of exceedances of the single sample bacteria limits and the 30-day geometric mean limit during summer dry-weather (April 1 to October 31). In response to a written request from a responsible jurisdiction or responsible agency, the Executive Officer of the Regional Board may extend the compliance date for the summer dry-weather allocations from 3 years to up to 6 years from the effective date of this TMDL. The Executive Officer's decision to extend the summer dry-weather compliance date must be based on supporting documentation to justify the extension, including a detailed work plan, budget and contractual or other commitments by the responsible jurisdiction or responsible agency.
3 years after effective date of this TMDL	The Regional Board shall reconsider this TMDL to: (1) Consider a natural source exclusion for bacteria loadings from birds in the Malibu Lagoon if all anthropogenic sources to the Lagoon have been controlled. (2) Reassess the allowable winter dry-weather and wet-weather exceedances days based on additional data on bacterial indicator densities, and an evaluation of site-specific variability in exceedance levels to determine whether existing water quality is better than water quality at the reference watershed, (3) Reassess the allowable winter dry-weather and wet-weather exceedance days based on a re-evaluation of the selected reference watershed and consideration of other reference watersheds that may better represent reaches of the Malibu Creek and Lagoon. (4) Consider whether the allowable winter dry-weather and wet-weather exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (5) Re-evaluate the reference year used in the calculation of allowable exceedance days, and (6) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.
6 years after the effective date of this TMDL	Achieve compliance with the applicable Load Allocations and Waste Load Allocations, expressed as allowable exceedance days during winter dry weather (November 1-March 31) single sample limits and the rolling 30-day geometric mean limit.

Date	Action
10 years after the effective date of this TMDL ** May be extended up to July 15, 2021.	Achieve compliance with the wet-weather Load Allocations and Waste Load Allocations (expressed as allowable exceedance days for wet weather and compliance with the rolling 30-day geometric mean limit.) The Regional Board may extend the wet-weather compliance date up to July 15, 2021 at the Regional Board's discretion, by adopting a subsequent Basin Plan amendment that complies with applicable law.

7-11 Los Angeles Harbor Bacteria TMDL - Inner Cabrillo Beach and Main Ship Channel

This TMDL was adopted by:
The Regional Water Quality Control Board on July 1, 2004.

This TMDL was approved by:
The State Water Resources Control Board on October 21, 2004.
The Office of Administrative Law on January 5, 2005.
The U.S. Environmental Protection Agency on March 1, 2005.

The effective date of this TMDL is: March 10, 2005.

The following table includes the elements of this TMDL.

Table 7-11.1. Los Angeles Harbor Bacteria TMDL (Inner Cabrillo Beach and Main Ship Channel): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use of Inner Cabrillo Beach and the potential REC-1 uses of the Main Ship Channel in the Los Angeles Harbor. Swimming in marine waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine waters to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA. For Cabrillo Beach, the targets will apply at existing monitoring sites, with samples taken at ankle depth as they are now. For the Main Ship Channel, the targets will apply at existing or new monitoring sites with samples collected at the surface. Any new monitoring sites must be approved by the Executive Officer. These targets apply during both dry and wet weather, since there is water contact recreation throughout the year, including during wet weather. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, and an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)

Element	Key Findings and Regulatory Provisions
Source Analysis	Dry-weather urban runoff and storm water conveyed by storm drains are major sources of elevated bacterial indicator densities to Inner Cabrillo Beach and the Main Ship Channel during dry and wet-weather. As of March 2004, there are 15 active individual and 15 active general, NPDES permits for discharges to the Inner or Outer Los Angeles Harbor including the Terminal Island Treatment Plant. While the fecal coliform counts in the wastewater field indicate a contribution of bacteria to the Harbor by the Terminal Treatment Plant, the wastewater field is sufficiently diluted and the bacterial densities are so much lower in the Harbor than the high bacterial densities and exceedences at the sites at Cabrillo Beach and in the Main Ship Channel that it appears that the Treatment Plant is not a significant source of bacteria to the Beach or to the Ship Channel. Potential nonpoint sources of bacterial contamination at Inner Cabrillo Beach and Main Ship Channel include marina activities such as waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts and natural sources from birds, waterfowl and other wildlife. The bacteria loads associated with these nonpoint sources are not well quantified. However, bacterial contamination at the beach is concentrated in the shallow (ankle depth) waters more than even waters a few feet away (at knee or chest depth). This supports the contention that high bacterial densities may be largely from the beach, itself.
Loading Capacity	Studies (for example, Haile, R.W., Witte, J.S. 1997. Addendum to "An epidemiological study of possible adverse health effects of swimming in Santa Monica Bay." Santa Monica Bay Restoration Project) show that bacterial degradation and dilution during transport from the watershed to the receiving water do not significantly affect bacterial indicator densities. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains or other sources initially mix with the receiving water throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are:

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event). For the MSC and the Inner Harbor, the City of Los Angeles and the County of Los Angeles are the responsible agencies[2]. The City of Los Angeles is the primary jurisdiction because Inner Cabrillo Beach and Main Ship Channel are located entirely in the City of Los Angeles. The Los Angeles Harbor is owned and operated by the City. All proposed WLAs for summer, dry-weather, single sample bacterial densities in the MSC or the Inner Harbor are zero (0) days of allowable exceedances.[3] The proposed WLAs for single sample winter dry-weather and wet-weather for the monitoring location HW07 is as shown in Table 7-11.2. WLAs for storm drains in the Inner Harbor for summer, dry-weather, single sample bacterial densities are also zero (0) days of allowable exceedances. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site in MSC or the Inner Harbor is zero (0) days of allowable exceedances. Discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the Watershed will also be subject to a WLA of zero days of allowable exceedances. For Inner Cabrillo Beach, the City of Los Angeles is the responsible agency. For the Southern area of Inner Cabrillo Beach, the proposed WLAs for summer, dry-weather, winter dry-weather and wet-weather single sample bacterial densities at the ICB swimming beach are zero (0) days of allowable exceedances. Further study of the storm drains on the north part of ICB may lead to the establishment of WLAs for single sample winter dry-weather and wet-weather for these storm drains. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site at ICB is zero (0) days of allowable exceedances.

Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. All proposed LAs for summer, dry-weather, winter dry-weather and wet-weather, single sample bacterial densities in the MSC are zero (0) days of allowable exceedances The load allocation for the rolling 30-day geometric mean during any time period or monitoring site in MSC or the Inner Harbor is zero (0) days of allowable exceedances. All proposed LAs for summer, dry-weather, single sample bacterial densities at the ICB swimming beach are zero (0) days of allowable exceedances. The proposed LAs for single sample winter dry-weather and wet-weather for the monitoring locations CB1 and CB2 are as shown in Table 7-11.2. Further study of the the north part of ICB may lead to the establishment of LAs for this area. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site at ICB is zero (0) days of allowable exceedances.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), general and individual NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Load allocations for nonpoint sources will be implemented within the context of this TMDL. This TMDL will be implemented in three phases over a five-year period (see Table 7-11.3. Within five years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather s (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved. Within five years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	For those monitoring locations subject to the antidegradation provision (HW07, wet weather), there shall be no increase in exceedance days during the implementation period above the estimated days for the monitoring location in the critical year as identified in Table 7-11.2. The Regional Board intends to reconsider this TMDL, consistent with the scheduled reconsideraton of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board intends to conduct a similar review of this TMDL within 4 years after the effective date. In addition, if a suitable reference watershed that is representative of an enclosed harbor has not been found by this time, the Regional Board may consider implementing a 'natural source exclusion approach subject to antidegradation policies' to the Los Angeles Harbor in lieu of the 'reference watershed/antidegradation approach'.
Margin of Safety	A margin of safety has been implicitly included through several conservative assumptions, such as the assumption that no dilution takes place between the on-shore sources and where the effluent initially mixes with the receiving water, and that bacterial degradation rates are not fast enough to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading is during wet weather, when historic monitoring data for Los Angeles Habor and the reference beach indicate greater exceedance probabilities of the single sample bacteria objectives then during dry-weather. To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-11.2, the 90th percentile 'storm year'[4] in terms of wet days[5] is used as the reference year.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	The City of Los Angeles will continue to monitor at sites CB1, CB2 and HW07 as required by Terminal Island Treatment Plant NPDES Permit. This permit is scheduled to be revised in 2004 and will consider this TMDL. Additional monitoring sites may be added by responsible parties as necessary and the compliance monitoring requirment may be moved to another permit if determined to be more appropriate by the Regional Board. A special study shall be conducted by the City of Los Angles in the North area of Inner Cabrillo Beach to assess water quality and compliance with the standards in this TMDL. The special study of the North portion of Inner Cabrillo Beach can include details to support development of a Natural Sources Exclusion in this area if it is found that natural sources such as birds are the sources of bacterial impairment of the northern area of Inner Cabrillo Beach. Beach monitoring sites will be taken in compliance with AB411 and the Southern California Beach Water Quality Working Group procedures. Open water sampling sites will be taken at the surface. A special study shall be conducted by the County of Los Angeles and City of Los Angeles to assess water quality and compliance with the standards in this TMDL in the MSC. The schedules for special studies are shown in Table 7-11.3.

Note: The complete staff report for the TMDL is available for review upon request.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local or state agencies that have jurisdiction over Los Angeles Harbor including Inner Cabrillo Beach and Main Ship Channel, (2) local agencies that are permittees or co-permittees on a municipal storm water permit.

3 In order to fully protect public health, no exceedances are permitted at any monitoring location during summer dry-weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) days of allowable exceedances are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, Title 17, Section 7958).

4 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

5 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

Table 7-11.2 Los Angeles Harbor Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

Compliance Deadline		5 years after effective date		5years after effective date		5 years after effective date[2]	
		Summer Dry Weather ^		Winter Dry Weather ^*		Wet Weather ^*	
		April 1 - October 31		November 1 – March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
CB1; CB2	Inner Cabrillo Beach	0	0	3 (LA)	1 (LA)	17 (LA)	3 (LA)
HW07	Main Ship Channel	0	0	3 (WLA)	1 (WLA)	15** (WLA)	3** (WLA)

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.
The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station
The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.
^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.
*A revision of the TMDL is scheduled for four years after the effective date of the Los Angeles Harbor TMDL in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources.
**The Main Ship Channel (HW07) is already meeting the allowable exceedance days for wet weather and is subject to the antidegradation provision; there shall be no increase in exceedance days during the implementation period above that estimated for the monitoring location in the critical year (15 days/daily sampling, 3 days/weekly sampling).

Table 7-11.3 Los Angeles Harbor Bacteria TMDL (Inner Cabrillo Beach & Main Ship Channel): Significant Dates

Implementation Action	Responsible Party	Date
Implementation (ICB): Implement additional simple Best Management Practices at ICB including additional trash pickup and educational signage. (Tier 1)	• City of Los Angeles	Six months after Effective Date of TMDL.
Implementation (ICB): Submit Work Plan to Implement Best Management Practices and Source Control at ICB for Executive Officer Approval including, but not limited to storm drain repair and reroute; inspect and repair gravity sewer line; implement sand cleaning; repair bird exclusion structure; additional education and signage. (Tier 1)	• City of Los Angeles	Six months after Effective Date of TMDL
Special Studies (ICB): Submit work plan to assess water quality in the northern area of Inner Cabrillo Beach for Executive Officer approval including a plan to monitor northern ICB and assess the discharge from storm drains into the Saltwater Marsh (Tier 2).	• City of Los Angeles	Six months after Effective Date of TMDL.
Special Studies (MSC): Submit work plan to assess water quality in the Inner Harbor for Executive Officer approval including a plan to monitor in proximity to selected storm drains. (Tier 2).	• City of Los Angeles • County of Los Angeles	Six months after Effective Date of TMDL.
Implementation (ICB): Submit work plan for Tier 2 BMPs for Executive Officer approval, including but not limited to alteration of bird exclusion structure, control of sources from cat population, and sand management. (Tier 2)	• City of Los Angeles	Six months after Effective Date of TMDL
Implementation (ICB): Complete implementation of Source Control and BMPs at ICB as identified in work plan including, but not limited to storm drain repair and reroute; inspection and repair gravity sewer line; trash disposal, sand cleanup; and repair bird exclusion structure. (Tier 1)	• City of Los Angeles	Twelve months after Effective Date of TMDL
Compliance (ICB): After implementation of Tier 1 and 2 actions, submit results of monitoring to determine degree of compliance with allowable exceedance days. (Tier 3)	• City of Los Angeles	Two years after Effective Date of TMDL
Implementation (MSC): Based on the results of the MSC special studies and compliance evaluation, submit Work Plan for Executive Officer approval for source control or diversion of storm drains that are found to be sources of bacterial loading to the MSC.	• City of Los Angeles • County of Los Angeles	Two-1/2 years after Effective Date of TMDL
Implementation (ICB): If compliance is not achieved at the southern portion of Inner Cabrillo Beach, provide report to be approved by the Executive Officer of Tier III actions, to include but not be limited to, nearshore circulation or treatment of shallow water improvements, with a time schedule to attain water quality objectives. (Tier 3)	• City of Los Angeles	Three years after Effective Date of TMDL

Regional Board shall reconsider this TMDL to: a) refine allowable exceedance days based on additional data on bacterial indicator densities b) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependant on the rainfall conditions and an evaluation of natural variability in the reference system(s), and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the 'natural sources exclusion approach subject to antidegradation policies' rather than the 'reference system/antidegradation' approach, c) re-evaluate the reference year used in the calculation of allowable exceedance days, and d) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision. e) Evaluate the feasibility of a natural sources exclusion for the non-swimming portion of ICB f) Re-evaluate the implementation schedule.	• Regional Board	Four years after Effective Date of TMDL, or at the time of reconsideration of the Santa Monica Beaches Bacteria
Final Compliance (MSC): Within five years of the effective date of the TMDL, there shall be no exceedances in excess of the numbers in Table 6-3 and 6-4 of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved.	• City of Los Angeles • County of Los Angeles	Five years after Effective Date of TMDL
Implementation (ICB): All tier 3 remedies to be completed within five years of the Effective Date of the TMDL. (Tier 3)	• City of Los Angeles	Five years after Effective Date of TMDL
Final Compliance (ICB): Within five years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during any of the periods (Tables 6-3, 6-4 and 6-5) and the rolling 30-day geometric mean targets must be achieved.	• City of Los Angeles	Five years after the Effective Date of the TMDL

7-12 Ballona Creek Metals TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on July 7, 2005

This TMDL was approved by:

The State Water Resources Control Board on October 20, 2005.
The Office of Administrative Law on December 9, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

This TMDL was voided and set aside on: May 6, 2009.

This TMDL was re-adopted by:

The Regional Water Quality Control Board on September 6, 2007.

This amended TMDL was approved by:

The State Water Resources Control Board on June 17, 2008.
The Office of Administrative Law on October 6, 2008.
The U.S. Environmental Protection Agency on October 29, 2008.

The effective date of this TMDL is: October 29, 2008.

The following tables include the elements of this TMDL.

Table 7-12.1. Ballona Creek Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Ballona Creek is on Clean Water Act Section 303(d) list of impaired waterbodies for dissolved copper, dissolved lead, total selenium, and dissolved zinc and Sepulveda Canyon Channel is 303(d) listed for lead. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The following designated beneficial uses are impaired by these metals: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL). TMDLs are developed for reaches on the 303(d) list and metal allocations are developed for tributaries that drain to impaired reaches. This TMDL address dry- and wet-weather discharges of copper, lead, selenium and zinc in Ballona Creek and Sepulveda Canyon Channel.
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations)	Numeric water quality targets are based on the numeric water quality standards established for metals by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate numeric targets for dry and wet weather because hardness values and flow conditions in Ballona Creek and Sepulveda Canyon Channel vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in Ballona Creek is less than 40 cubic feet per second (cfs). The wet-weather targets apply to days when the maximum daily flow in Ballona Creek is equal to or greater than 40 cfs.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations) (continued)	**Dry Weather** The dry-weather targets are based on the chronic CTR criteria. The copper, lead and zinc targets are dependent on hardness to adjust for site-specific conditions and require conversion factors to convert between dissolved and total recoverable metals. These targets are based on the 50th percentile hardness value of 300 mg/L and the CTR default conversion factors. The conversion factor for lead is hardness dependent, which is also based on a hardness of 300 mg/L. The dry-weather target for selenium is independent of hardness and expressed as total recoverable metals. **Dry-weather numeric targets (µg total recoverable metals/L)** | | Dissolved | Conversion Factor | Total Recoverable | Copper: 23 | 0.96 | 24 Lead: 8.1 | 0.631 | 13 Selenium: | | 5 Zinc: 300 | 0.986 | 304 **Wet Weather** The wet-weather targets for copper, lead and zinc are based on the acute CTR criteria and the 50th percentile hardness value of 77 mg/L for storm water collected at Sawtelle Boulevard. Conversion factors for copper and zinc are based on a regression of dissolved metal values to total metal values collected at Sawtelle. The CTR default conversion factor based on a hardness value of 77 mg/L is used for lead. The wet-weather target for selenium is independent of hardness and expressed as total recoverable metals. **Wet-weather numeric targets (µg total recoverable metals/L)** | | Dissolved | Conversion Factor | Total Recoverable | Copper: 11 | 0.62 | 18 Lead: 49 | 0.829 | 59 Selenium: | | 5 Zinc: 94 | 0.79 | 119
Source Analysis	There are significant difference in the sources of copper, lead, selenium and zinc loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. Storm drains convey a large percentage of the metals loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. During dry years, dry-weather loadings account for 25-35% of the annual metals loadings. Additional sources of dry weather flow and metals loading include groundwater discharge and flows from other permitted NPDES discharges within the watershed.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Source Analysis (continued)</td><td>
During wet weather, most of the metals loadings in Ballona Creek are in the particulate form and are associated with wet-weather storm water flows. On an annual basis, storm water contributes about 91% of the copper loading and 92% of the lead loading to Ballona Creek. Storm water flow is permitted through the municipal separate storm sewer system (MS4) permit issued to the County of Los Angeles, a separate Caltrans storm water permit, a general construction storm water permit, and a general industrial storm water permit.
Non-point sources are not considered to be a significant source in this TMDL. Direct atmospheric deposition of metals is insignificant relative to the annual dry-weather loading or the total annual loading. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition are accounted for in the estimates of the storm water loading.
</td></tr>
<tr><td>Loading Capacity</td><td>
TMDLs are developed for copper, lead, selenium and zinc for Ballona Creek and Sepulveda Canyon Channel.
Dry Weather
Dry-weather loading capacities for Ballona Creek and Sepulveda Canyon Channel are equal to the dry-weather numeric targets multiplied by the critical dry-weather flow for each waterbody. Based on long-term flow records for Ballona Creek at Sawtelle the median dry-weather flow is 14 cfs. The median dry-weather flow for Sepulveda Canyon Channel, based on measurements conducted in 2003, is 6.3 cfs.
<u>Dry-weather loading capacity (grams total recoverable metals/day)</u>
<table>
<tr><th></th><th>Copper</th><th>Lead</th><th>Selenium</th><th>Zinc</th></tr>
<tr><td>Ballona Creek</td><td>821</td><td>440</td><td>171</td><td>10,423</td></tr>
<tr><td>Sepulveda Channel</td><td>371</td><td>199</td><td>77</td><td>4,712</td></tr>
</table>
Wet Weather
Wet-weather loading capacities are calculated by multiplying the daily storm volume by the wet-weather numeric target for each metal.
<u>Wet-weather loading capacity (total recoverable metals)</u>
<table>
<tr><th>Metal</th><th>Load Capacity</th></tr>
<tr><td>Copper</td><td>Daily storm volume x 18 µg/L</td></tr>
<tr><td>Lead</td><td>Daily storm volume x 59 µg/L</td></tr>
<tr><td>Selenium</td><td>Daily storm volume x 5 µg/L</td></tr>
<tr><td>Zinc</td><td>Daily storm volume x 119 µg/L</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Load Allocations
(for nonpoint sources)</td><td>
Load allocations (LA) are assigned to non-point sources for Ballona Creek and Sepulveda Canyon Channel.

Dry Weather

Dry-weather load allocations for copper, lead and zinc are developed for direct atmospheric deposition. The mass-based load allocations are equal to the ratio of the length of each segment over the total length multiplied by the estimates of direct atmospheric loading for Ballona Creek (3.5 g/day for copper, 2.3 g/day for lead, and 11.7 k/day for zinc).

Dry-weather direct air deposition LAs (total recoverable metals)
<table>
<tr><th></th><th>Copper (g/day)</th><th>Lead (g/day)</th><th>Zinc (g/day)</th></tr>
<tr><td>Ballona Creek</td><td>2.0</td><td>1.4</td><td>6.8</td></tr>
<tr><td>Sepulveda Channel</td><td>0.3</td><td>0.2</td><td>0.9</td></tr>
</table>
Wet Weather

Wet-weather load allocations for copper, lead, selenium and zinc are developed for direct atmospheric deposition. The mass-based load allocations for direct atmospheric deposition are equal to the percent area of surface water (0.6%) multiplied by the total loading capacity.

Wet-weather direct air deposition LAs (total recoverable metals)
<table>
<tr><th></th><th>Load Allocation (grams/day)</th></tr>
<tr><td>Copper</td><td>1.05E-07 x Daily storm volume (L)</td></tr>
<tr><td>Lead</td><td>3.54E-07 x Daily storm volume (L)</td></tr>
<tr><td>Selenium</td><td>3.00E-08 x Daily storm volume (L)</td></tr>
<tr><td>Zinc</td><td>7.14E-07 x Daily storm volume (L)</td></tr>
</table>
</td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>
Waste load allocations (WLA) are assigned to point sources for Ballona Creek and Sepulveda Canyon Channel. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocation from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

Dry Weather

Dry-weather waste load allocation for storm water is equal to the dry-weather critical flow multiplied by the dry-weather numeric target minus the load allocation for direct atmospheric deposition.

Dry-weather Storm Water WLAs
(grams total recoverable metals/day)
<table>
<tr><th></th><th>Copper</th><th>Lead</th><th>Selenium</th><th>Zinc</th></tr>
<tr><td>Ballona Creek</td><td>818.9</td><td>438.6</td><td>171</td><td>10,416.2</td></tr>
<tr><td>Sepulveda Channel</td><td>370.7</td><td>198.8</td><td>77</td><td>4,711.1</td></tr>
</table>
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	A waste load allocation of zero is assigned to all general construction and industrial storm water permits during dry weather. Therefore, the storm water waste load allocations are apportioned between the MS4 permittees and Caltrans, based on an areal weighting approach.

Dry-weather Storm Water WLAs Apportioned between Storm Water Permits (grams total recoverable metals/day)

	Copper	Lead	Selenium	Zinc
Ballona Creek				
MS4 permittees	807.7	432.6	169	10,273.1
Caltrans	11.2	6.0	2	143.1
Sepulveda Channel				
MS4 Permittees	365.6	196.1	76	4646.4
Caltrans	5.1	2.7	1	64.7

Concentration-based dry-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.

Dry-weather WLAs for other permits (total recoverable metals)

Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)
24	13	5	304

Wet Weather

Wet-weather waste load allocation for storm water is equal to the total loading capacity minus the load allocation for direct atmospheric deposition. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.

Wet-weather Storm Water WLAs (total recoverable metals)

	Waste Load Allocation (grams/day)
Copper	1.79E-05 x Daily storm volume (L)
Lead	5.87E-05 x Daily storm volume (L)
Selenium	4.97E-06 x Daily storm volume (L)
Zinc	1.18E-04 x Daily storm volume (L)

The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	**Wet-weather Storm Water WLAs Apportioned Between Storm Water Permits (total recoverable metals)** Waste Load Allocation (grams/day) Copper MS4 Permittees 1.70E-05 x Daily storm volume (L) Caltrans 2.37E-07 x Daily storm volume (L) General Construction 4.94E-07 x Daily storm volume (L) General Industrial 1.24E-07 x Daily storm volume (L) Lead MS4 Permittees 5.58E-05 x Daily storm volume (L) Caltrans 7.78E-07 x Daily storm volume (L) General Construction 1.62E-06 x Daily storm volume (L) General Industrial 4.06E-07 x Daily storm volume (L) Selenium MS4 Permittees 4.73E-06 x Daily storm volume (L) Caltrans 6.59E-08 x Daily storm volume (L) General Construction 1.37E-07 x Daily storm volume (L) General Industrial 3.44E-08 x Daily storm volume (L) Zinc MS4 Permittees 1.13E-04 x Daily storm volume (L) Caltrans 1.57E-06 x Daily storm volume (L) General Construction 3.27E-06 x Daily storm volume (L) General Industrial 8.19E-07 x Daily storm volume (L) Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility. **Individual per Acre WLAs for General Construction or Industrial Storm Water Permittees (total recoverable metals)** Waste Load Allocation (grams/day/acre) Copper 2.20E-10 x Daily storm volume (L) Lead 7.20E-10 x Daily storm volume (L) Selenium 6.10E-11 x Daily storm volume (L) Zinc 1.45E-09 x Daily storm volume (L) Concentration-based wet-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations. **Wet-weather WLAs for other permits (total recoverable metals)** Copper (µg/L) Lead (µg/L) Selenium (µg/L) Zinc (µg/L) 18 59 5 119

Element	Key Findings and Regulatory Provisions
Margin of Safety	There is an implicit margin of safety through the use of conservative values for the conversion from total recoverable metals to the dissolved fraction during dry and wet weather. In addition, the TMDL includes a margin of safety by evaluating dry-weather and wet-weather conditions separately and assigning allocations based on two disparate critical conditions.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in Sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL by January 11, 2011 based on additional data obtained from special studies. Table 7-12.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Compliance schedules may be established in individual NPDES permits, allowing up to 5 years within a permit cycle to achieve compliance. Compliance schedules may not be established in general NPDES permits. A discharger that can not comply immediately with effluent limitations specified to meet waste load allocations will be required to apply for an individual permit, in order to, demonstrate the need for a compliance schedule. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs. **General Industrial Storm Water Permits:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	Dry-weather Implementation Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the concentration-based waste load allocations assigned to the other NPDES Permits. The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ. It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. Wet-weather Implementation The general industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors until no later than January 11, 2016. **Interim Wet-Weather WLAs for General Industrial Storm Water Permittees (total recoverable metals)** <table><tr><th>Copper (µg/L)</th><th>Lead (µg/L)</th><th>Selenium (µg/L)</th><th>Zinc (µg/L)</th></tr><tr><td>63.6</td><td>81.6</td><td>238.5</td><td>117</td></tr></table> Until January 11, 2011, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After January 11, 2011, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations. **General Construction Storm Water Permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. <u>Dry-weather Implementation</u> Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3 and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ. <u>Wet-weather Implementation</u> By January 11, 2013, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration by January 11, 2014. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs by January 11, 2015. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board by January 11, 2014, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Ballona Creek watershed is the City of Los Angeles. Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to the dry-weather concentration-based waste load allocations assigned to the other NPDES permits. Each municipality and permittee will be required to meet the storm water waste load allocation at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the stormwater waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. Based on long-term flow records, dry-weather flows in Ballona Creek are estimated to be 14 cubic feet per second (cfs). Since, this flow has been very consistent, 14 cfs is used to define the critical dry-weather flow for Ballona Creek at Sawtelle Boulevard (upstream of Sepulveda Canyon Channel). There are no historic flow records to determine the average long-term flows for Sepulveda Canyon Channel. Therefore, in the absence of historical records the 2003 dry-weather characterization study measurements are assumed reasonable estimates of flow for this channel. The critical dry-weather flow for Sepulveda Canyon Channel is defined as the average flow of 6.3 cfs. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation varies by storm, therefore, given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.

Element	Key Findings and Regulatory Provisions
Monitoring	Effective monitoring will be required to assess the condition of the Ballona Creek and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to Ballona Creek. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient monitoring** An ambient monitoring program is necessary to assess water quality throughout Ballona Creek and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall analyze samples for total recoverable metals and dissolved metals, including cadmium and silver, and hardness once a month at each monitoring location. The reported detection limits shall be lower than the hardness adjusted CTR criteria to determine if water quality objectives are being met. There are three ambient monitoring locations. **Ambient Monitoring Locations** Waterbody — Location Ballona Creek — At Sawtelle Boulevard Sepulveda Channel — Just Above the Confluence with Ballona Creek Ballona Creek — At Inglewood Boulevard **TMDL Effectiveness Monitoring** The MS4 and Caltrans storm water NPDES permittees are jointly responsible for assessing the progress in reducing pollutant loads to achieve the TMDL. The MS4 and Caltrans storm water NPDES permittees are required to submit for approval of the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL, which requires attainment of the applicable waste load allocations in prescribed percentages of the watershed over a 15-year period. The monitoring locations specified for the ambient monitoring program may be used as the effectiveness monitoring locations.

Element	Key Findings and Regulatory Provisions
Monitoring	The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the dry-weather waste load allocations if the in-stream pollutant concentrations or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the concentration-based waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the wet-weather waste load allocations if the loading at the most downstream monitoring location is equal to or less then the wet-weather waste load allocation. Compliance with individual general construction and industrial storm water permittees will be based on monitoring of discharges at the property boundary. Compliance may be assessed based on concentration and/or load allocations. The general storm water permits shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permits shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities under their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. **Special studies** The implementation schedule, Table 7-12.2, allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL by January 11, 2011 in light of the findings of these studies. Studies may include: • Refinement of hydrologic and water quality model • Additional source assessment • Refinement of potency factors correlation between total suspended solids and metals loadings during dry and wet weather • Correlation between short-term rainfall intensity and metals loadings for use in sizing in-line structural BMPs • Correlation between storm volume and total recoverable metals loading for use in sizing storm water retention facilities • Refined estimates of metals partitioning coefficients, conversion factors, and site-specific toxicity. • Evaluation of potential contribution of aerial deposition and sources of aerial deposition.

Table 7-12.2. Ballona Creek Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate the waste load allocations into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance or re-issuance.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
Upon permit issuance or renewal	The non-storm water NPDES permittees shall achieve the waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Compliance schedules may allow up to five years in individual NPDES permits to meet permit requirements. Compliance schedules may not be established in general NPDES permits. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance or renewal	The general industrial storm water NPDES permittees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
January 11, 2011	The general industrial storm water NPDES permittees shall achieve the interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final wet-weather WLAs.

Date	Action
January 11, 2016	The general industrial storm water NPDES permittees shall achieve the final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
January 11, 2013	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
January 11, 2014	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs.
January 11, 2015	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
January 11, 2007	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence within 6 months.
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining the drainage areas to be address and how these areas will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 25% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.

Date	Action
January 11, 2014	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations.
January 11, 2016	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 50% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.
January 11, 2021	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting both the dry-weather and wet-weather waste load allocations.

7-13 Los Angeles River and Tributaries Metals TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 2, 2005.

This TMDL was approved by:
The State Water Resources Control Board on October 20, 2005.
Office of Administrative Law on December 9, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

This TMDL was voided and set aside on: May 6, 2009.

This TMDL was re-adopted by
The Regional Water Quality Control Board on September 6, 2007.

This TMDL was approved by:
The State Water Resources Control Board on June 17, 2008.
The Office of Administrative Law on October 14, 2008.
The U.S. Environmental Protection Agency on October 29, 2008.

This TMDL was revised and adopted by
The Regional Water Quality Control Board on May 6, 2010.

This TMDL revision was approved by:
The State Water Resources Control Board on April 19, 2011.
The Office of Administrative Law on July 27, 2011.
The U.S. Environmental Protection Agency on TBD.

The effective date of this TMDL is: October 29, 2008.

The following table includes the elements of this TMDL.

Table 7-13.1 Los Angeles River and Tributaries Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Segments of the Los Angeles River and its tributaries are on the Clean Water Act section 303(d) list of impaired waterbodies for copper, cadmium, lead, zinc, aluminum and selenium. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The beneficial uses impaired by metals in the Los Angeles River and its tributaries are those associated with aquatic life and water supply, including wildlife habitat, rare, threatened or endangered species, warm freshwater habitat, wetlands, and groundwater recharge. TMDLs are developed for reaches on the 303(d) list and for reaches where recent data indicate additional impairments. Addressing the impairing metals throughout the Los Angeles River watershed will ensure that the metals do not contribute to an impairment elsewhere in the watershed. Metals allocations are therefore developed for upstream reaches and tributaries that drain to impaired reaches. These TMDLs address wet- and dry-weather discharges of copper, lead, zinc and selenium and wet-weather discharges of cadmium. Impairments related to cadmium only occur during wet weather. Impairments related to selenium are confined to Reach 6 and its tributaries. Dry-weather impairments related to zinc only occur in Rio Hondo Reach 1. The aluminum listing was based on water quality objectives set to support the municipal water supply beneficial use (MUN). MUN is a conditional use in the Los Angeles River watershed. The United States Environmental Protection Agency (USEPA) has determined that TMDLs are not required for impairments of conditional uses.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)</td><td>
Numeric water quality targets are based on the numeric water quality criteria established by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate targets for dry and wet weather because hardness values and flow conditions in the Los Angeles River and tributaries vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in the River is less than 500 cfs. The wet-weather targets apply to days when the maximum daily flow in the River is equal to or greater than 500 cfs.
The dry-weather targets for copper and lead are based on chronic CTR criteria. The dry-weather targets for zinc are based on acute CTR criteria. Copper, lead and zinc targets are dependent on hardness and a water effects ratio (WER), which are both factors built into the CTR criteria to adjust for site specific conditions, and conversion factors to convert between dissolved and total recoverable metals. Copper and lead targets are based on 50th percentile hardness values. Zinc targets are based on 10th percentile hardness values. Site-specific copper conversion factors are applied immediately downstream of the Tillman and LA-Glendale water reclamation plants (WRP). CTR default conversion factors are used for copper, lead, and zinc in all other cases. The dry-weather target for selenium is independent of hardness or conversion factors.
Dry-weather conversion factors:
<table>
<tr><th></th><th>Default</th><th>Below Tillman WRP</th><th>Below LA-Glendale WRP</th></tr>
<tr><td>Copper</td><td>0.96</td><td>0.74</td><td>0.80</td></tr>
<tr><td>Lead</td><td>0.79</td><td></td><td></td></tr>
<tr><td>Zinc</td><td>0.61</td><td></td><td></td></tr>
</table>
Dry-weather numeric targets (µg total recoverable metals/L)
<table>
<tr><th></th><th>Cu</th><th>Pb</th><th>Zn</th><th>Se</th></tr>
<tr><td>Reach 5, 6 and Bell Creek</td><td>WER[1] x 30</td><td>WER[1] x 19</td><td></td><td>5</td></tr>
<tr><td>Reach 4</td><td>WER[2] x 26</td><td>WER[1] x 10</td><td></td><td></td></tr>
<tr><td>Reach 3 above LA-Glendale WRP and Verdugo</td><td>WER[2] x 23</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Reach 3 below LA-Glendale WRP</td><td>WER[2] x 26</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Burbank Western Channel (above WRP)</td><td>WER[2] x 26</td><td>WER[1] x 14</td><td></td><td></td></tr>
<tr><td>Burbank Western Channel (below WRP)</td><td>WER[2] x 19</td><td>WER[1] x 9.1</td><td></td><td></td></tr>
<tr><td>Reach 2 and Arroyo Seco</td><td>WER[2] x 22</td><td>WER[1] x 11</td><td></td><td></td></tr>
<tr><td>Reach 1</td><td>WER[2] x 23</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Compton Creek</td><td>WER[1] x 19</td><td>WER[1] x 8.9</td><td></td><td></td></tr>
<tr><td>Rio Hondo Reach 1</td><td>WER[1] x 13</td><td>WER[1] x 5.0</td><td>WER[1] x 131</td><td></td></tr>
<tr><td>Monrovia Canyon</td><td></td><td>WER[1] x 8.2</td><td></td><td></td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.96.
</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)</td><td>The wet-weather targets for cadmium, copper, lead and zinc are based on acute CTR criteria and the 50^{th} percentile hardness values for storm water collected at the Wardlow gage station, multiplied by a WER. Conversion factors for copper, lead and zinc are based on a regression of dissolved metals values to total recoverable metals values collected at Wardlow. The CTR default conversion factor is applied to cadmium. The wet-weather target for selenium is independent of hardness or conversion factors.
Wet-weather conversion factors:
<table>
<tr><td>Cadmium</td><td>0.94</td></tr>
<tr><td>Copper</td><td>0.65</td></tr>
<tr><td>Lead</td><td>0.82</td></tr>
<tr><td>Zinc</td><td>0.61</td></tr>
</table>
Wet-weather numeric targets (μg total recoverable metals/L)
<table>
<tr><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th><th>Se</th></tr>
<tr><td>WER[1] x 3.1</td><td>WER[2] x 17</td><td>WER[1] x 62</td><td>WER[1] x 159</td><td>5</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.96.</td></tr>
<tr><td>Source Analysis</td><td>There are significant differences in the sources of metals loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry weather. The storm drains also contribute a large percentage of the loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed.

During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather storm water flow. On an annual basis, storm water contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading. This storm water flow is permitted through two municipal separate storm sewer system (MS4) permits, a separate Caltrans MS4 permit, a general construction storm water permit and a general industrial storm water permit.

Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of storm water loadings.

The sources of selenium appear to be related to natural levels of selenium in soils in the upper watershed. Separate studies are underway to evaluate whether selenium levels represent a “natural condition” for this watershed.</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Loading Capacity	**Dry Weather** Dry-weather TMDLs are developed for the following pollutant waterbody combinations (allocations are developed for upstream reaches and tributaries to meet TMDLs in downstream reaches): • Copper for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Compton Creek, Tujunga Wash, Rio Hondo Reach 1. • Lead for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Rio Hondo Reach 1, Compton Creek, Monrovia Canyon Creek. • Zinc for Rio Hondo Reach 1. • Selenium for Reach 6, Aliso Creek, Dry Canyon Creek, McCoy Canyon Creek. For dry weather, loading capacities are equal to reach-specific numeric targets multiplied by reach-specific critical dry-weather flows. Summing the critical flows for each reach and tributary, the critical flow for the entire river is 203 cfs, which is equal to the combined design flow of the three POTWs (169 cfs) plus the median flow from the storm drains and tributaries (34 cfs). The median storm drain and tributary flow is equal to the median flow at Wardlow (145 cfs) minus the existing median POTW flow (111 cfs). The dry-weather loading capacities for each impaired reach include the critical flows for upstream reaches. The dry-weather loading capacity for Reach 5 includes flows from Reach 6 and Bell Creek, the dry-weather loading capacity for Reach 3 includes flows from Verdugo Wash, and the dry-weather loading capacity for Reach 2 includes flows from Arroyo Seco.

Dry-weather loading capacity (total recoverable metals)

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 5	8.74	WER[1] x 0.65	WER[1] x 0.39	
LA River Reach 4	129.13	WER[2] x 8.1	WER[1] x 3.2	
LA River Reach 3	39.14	WER[2] x 2.3	WER[1] x 1.01	
LA River Reach 2	4.44	WER[2] x 0.16	WER[1] x 0.084	
LA River Reach 1	2.58	WER[2] x 0.14	WER[1] x 0.075	
Tujunga Wash	0.15	WER[1] x 0.007	WER[1] x 0.0035	
Burbank Channel	17.3	WER[2] x 0.80	WER[1] x 0.39	
Rio Hondo Reach 1	0.50	WER[1]x 0.015	WER[1]x0.0061	WER[1]x0.16
Compton Creek	0.90	WER[1] x 0.041	WER[1] x 0.020	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.96.

No dry-weather loading capacities are calculated for lead in Monrovia Canyon Creek or selenium in Reach 6 or its tributaries. Concentration-based allocations are assigned for these metals in these reaches.

Element	Key Findings and Regulatory Provisions
Loading Capacity (continued)	**Wet Weather** Wet-weather TMDLs are calculated for cadmium, copper, lead, and zinc in Reach 1. Allocations are developed for all upstream reaches and tributaries to meet these TMDLs. Wet-weather loading capacities are calculated by multiplying daily storm volumes by the wet-weather numeric target for each metal. The resulting curves identify the load allowance for a given flow. **Wet-weather loading capacity (total recoverable metals)** **Metal** — **Load Duration Curve (kg/day)** Cadmium — Daily storm volume x WER[1] x 3.1 µg/L Copper — Daily storm volume x WER[2] x 17 µg/L Lead — Daily storm volume x WER[1] x 62 µg/L Zinc — Daily storm volume x WER[1] x 159 µg/L [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.96.
Load Allocations (for nonpoint sources)	**Dry Weather** Dry-weather nonpoint source load allocations (LAs) for copper and lead apply to open space and direct atmospheric deposition to the river. Dry-weather open space load allocations are equal to the critical flow for the upper portion of tributaries that drain open space, multiplied by the numeric targets for these tributaries. **Open space dry-weather LAs (total recoverable metals)** | | **Critical Flow** | **Cu (kg/day)** | **Pb (kg/day)** | Tujunga Wash — 0.12 — WER[1] x 0.0056 — WER[1] x 0.0028 Arroyo Seco — 0.33 — WER[1] x 0.018 — WER[1] x 0.009 [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. Load allocations for direct atmospheric deposition to the entire river are obtained from previous studies (3 kg/year for copper, 2 kg/year for lead and 10 kg/year for zinc.) Loads are allocated to each reach and tributary based on their length. The ratio of the length of each river segment to the total length of the river is multiplied by the estimates of direct atmospheric loading to the entire river.

Element	Key Findings and Regulatory Provisions
Load Allocations (continued) (for nonpoint sources)	**Direct air deposition dry-weather LAs (total recoverable metals)**

	Cu (kg/day)	Pb (kg/day)	Zn(kg/day)
LA River Reach 6	WER[1] x 3.3×10^{-4}	WER[1] x 2.2×10^{-4}	
LA River Reach 5	WER[1] x 3.6×10^{-4}	WER[1] x 2.4×10^{-4}	
LA River Reach 4	WER[1] x 8.1×10^{-4}	WER[1] x 5.4×10^{-4}	
LA River Reach 3	WER[1] x 6.04×10^{-4}	WER[1] x 4.03×10^{-4}	
LA River Reach 2	WER[1] x 1.4×10^{-3}	WER[1] x 9.5×10^{-4}	
LA River Reach 1	WER[1] x 4.4×10^{-4}	WER[1] x 2.96×10^{-4}	
Bell Creek	WER[1] x 2.98×10^{-4}	WER[1] x 1.99×10^{-4}	
Tujunga Wash	WER[1] x 7.4×10^{-4}	WER[1] x 4.9×10^{-4}	
Verdugo Wash	WER[1] x 4.7×10^{-4}	WER[1] x 3.2×10^{-4}	
Burbank Channel	WER[1] x 7.1×10^{-4}	WER[1] x 4.7×10^{-4}	
Arroyo Seco	WER[1] x 7.3×10^{-4}	WER[1] x 4.9×10^{-4}	
Rio Hondo Reach 1	WER[1] x 6.4×10^{-4}	WER[1] x 4.2×10^{-4}	WER[1]x 2.1×10^{-3}
Compton Creek	WER[1] x 6.5×10^{-4}	WER[1] x 4.3×10^{-4}	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A dry-weather concentration-based load allocation for lead equal to the dry-weather numeric target (WER[1] x 8.2 μg/L) applies to Monrovia Canyon Creek. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A dry-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 μg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

Wet Weather

Wet-weather load allocations for open space are equal to the percent metals loading from open space (predicted by the wet-weather model) multiplied by the total loading capacity, then by the ratio of open space located outside the storm drain system to the total open space area. There is no load allocation for cadmium because open space is not believed to be a source of the wet-weather cadmium impairment in Reach 1.

Wet-weather open space LAs (total recoverable metals)

Metal	Load Allocation (kg/day)
Copper	WER[1] x 2.6×10^{-10} μg /L/day x daily storm volume(L)
Lead	WER[1] x 2.4×10^{-10} μg /L/day x daily storm volume(L)
Zinc	WER[1] x 1.4×10^{-9} μg /L/day x daily storm volume(L)

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Load Allocations (continued)
(for nonpoint sources)</td><td>
Wet-weather load allocations for direct atmospheric deposition are equal to the percent area of the watershed comprised by surface water (0.2%) multiplied by the total loading capacity.

Wet-weather direct air deposition LAs (total recoverable metals)
<table>
<tr><th>Metal</th><th>Load Allocation (kg/day)</th></tr>
<tr><td>Cadmium</td><td>WER[1] x 6.2x10^{-10} μg /L/day x daily storm volume(L)</td></tr>
<tr><td>Copper</td><td>WER[1] x 3.4x10^{-10} μg /L/day x daily storm volume(L)</td></tr>
<tr><td>Lead</td><td>WER[1] x 1.2x10^{-10} μg /L/day x daily storm volume(L)</td></tr>
<tr><td>Zinc</td><td>WER[1] x 3.2x10^{-9} μg /L/day x daily storm volume(L)</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A wet-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 μg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.
</td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>
Dry Weather

Dry-weather point source waste load allocations (WLAs) apply to the three POTWs (Tillman, Glendale, and Burbank). A grouped waste load allocation applies to the storm water permitees (Los Angeles County MS4, Long Beach MS4, Caltrans, General Industrial and General Construction), which is calculated by subtracting load allocations (and waste load allocations for reaches with POTWs) from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

Mass- and concentration-based waste load allocations for Tillman, Los Angeles-Glendale and Burbank WRPs are developed to meet the dry-weather targets for copper and lead in Reach 4, Reach 3 and the Burbank Western Channel, respectively.

POTW dry-weather WLAs (total recoverable metals):
<table>
<tr><th></th><th>Cu</th><th>Pb</th></tr>
<tr><td>Tillman</td><td></td><td></td></tr>
<tr><td>Concentration-based (μg/L)</td><td>WER[2] x 26</td><td>WER[1] x 10</td></tr>
<tr><td>Mass-based (kg/day)</td><td>WER[2] x 7.8</td><td>WER[1] x 3.03</td></tr>
<tr><td>Glendale</td><td></td><td></td></tr>
<tr><td>Concentration-based (μg/L)</td><td>WER[2] x 26</td><td>WER[1] x 12</td></tr>
<tr><td>Mass-based (kg/day)</td><td>WER[2] x 2.0</td><td>WER[1] x 0.88</td></tr>
<tr><td>Burbank</td><td></td><td></td></tr>
<tr><td>Concentration-based (μg/L)</td><td>WER[2] x 19</td><td>WER[1] x 9.1</td></tr>
<tr><td>Mass-based (kg/day)</td><td>WER[2] x 0.64</td><td>WER[1] x 0.31</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.96. Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies existing at the time of permit issuance, reissuance, or modification.
</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)
(for point sources)</td><td>
Dry-weather waste load allocations for storm water are equal to storm drain flows (critical flows minus median POTW flows minus median open space flows) multiplied by reach-specific numeric targets, minus the contribution from direct air deposition.
Storm water dry-weather WLAs (total recoverable metals)
<table>
<tr><th></th><th>Critical Flow (cfs)</th><th>Cu (kg/day)</th><th>Pb (kg/day)</th><th>Zn (kg/day)</th></tr>
<tr><td>LA River Reach 6</td><td>7.20</td><td>WER[1] x 0.53</td><td>WER[1] x 0.33</td><td></td></tr>
<tr><td>LA River Reach 5</td><td>0.75</td><td>WER[1] x 0.05</td><td>WER[1] x 0.03</td><td></td></tr>
<tr><td>LA River Reach 4</td><td>5.13</td><td>WER[1] x 0.32</td><td>WER[1] x 0.12</td><td></td></tr>
<tr><td>LA River Reach 3</td><td>4.84</td><td>WER[1] x 0.06</td><td>WER[1] x 0.03</td><td></td></tr>
<tr><td>LA River Reach 2</td><td>3.86</td><td>WER[1] x 0.13</td><td>WER[1] x 0.07</td><td></td></tr>
<tr><td>LA River Reach 1</td><td>2.58</td><td>WER[1] x 0.14</td><td>WER[1] x 0.07</td><td></td></tr>
<tr><td>Bell Creek</td><td>0.79</td><td>WER[1] x 0.06</td><td>WER[1] x 0.04</td><td></td></tr>
<tr><td>Tujunga Wash</td><td>0.03</td><td>WER[1] x 0.001</td><td>WER[1] x 0.0002</td><td></td></tr>
<tr><td>Burbank Channel</td><td>3.3</td><td>WER[1] x 0.15</td><td>WER[1] x 0.07</td><td></td></tr>
<tr><td>Verdugo Wash</td><td>3.3</td><td>WER[1] x 0.18</td><td>WER[1] x 0.10</td><td></td></tr>
<tr><td>Arroyo Seco</td><td>0.25</td><td>WER[1] x 0.01</td><td>WER[1] x 0.01</td><td></td></tr>
<tr><td>Rio Hondo Reach 1</td><td>0.50</td><td>WER[1]x 0.01</td><td>WER[1]x0.006</td><td>WER[1]x 0.16</td></tr>
<tr><td>Compton Creek</td><td>0.90</td><td>WER[1] x 0.04</td><td>WER[1] x 0.02</td><td></td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
A zero waste load allocation is assigned to all industrial and construction storm water permittees during dry weather. The remaining waste load allocations are shared by the MS4 permittees and Caltrans.
Other NPDES Permits
Concentration-based dry-weather waste load allocations apply to the other NPDES permits* that discharge to the reaches and tributaries in the following table.
* “Other NPDES permits” refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) (for point sources)	**Other dry-weather WLAs (µg total recoverable metals/L)**

	Cu	Pb	Zn	Se
Reach 5, 6 and Bell Creek	WER[1] x 30	WER[1] x 19		5
Reach 4	WER[1] x 26	WER[1] x 10		
Reach 3 above LA-Glendale WRP and Verdugo	WER[1] x 23	WER[1] x 12		
Reach 3 below LA-Glendale WRP	WER[1] x 26	WER[1] x 12		
Burbank Western Channel(above WRP)	WER[1] x 26	WER[1] x 14		
Burbank Western Channel (below WRP)	WER[1] x 19	WER[1] x 9.1		
Reach 2 and Arroyo Seco	WER[1] x 22	WER[1] x 11		
Reach 1	WER[1] x 23	WER[1] x 12		
Compton Creek	WER[1] x 19	WER[1] x 8.9		
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

Wet Weather

During wet-weather, POTW allocations are based on dry-weather in-stream numeric targets because the POTWs exert the greatest influence over in-stream water quality during dry weather. During wet weather, the concentration-based dry-weather waste load allocations apply but the mass-based dry-weather allocations do not apply when influent flows exceed the design capacity of the treatment plants. Additionally, the POTWs are assigned reach-specific allocations for cadmium and zinc based on dry weather targets to meet the wet-weather TMDLs in Reach 1.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) (for point sources)	**POTW wet-weather WLAs (total recoverable metals):**

	Cd	Cu	Pb	Zn
Tillman				
Concentration-based (µg/L)	WER[1]x4.7	WER[2]x26	WER[1]x10	WER[1]x212
Mass-based (kg/day)	WER[1]x1.4	WER[2]x7.8	WER[1]x 3.03	WER[1]x64
Glendale				
Concentration-based (µg/L)	WER[1]x5.3	WER[2]x26	WER[1]x12	WER[1]x253
Mass-based (kg/day)	WER[1]x0.40	WER[2]x2.0	WER[1]x0.88	WER[1]x19
Burbank				
Concentration-based (µg/L)	WER[1]x4.5	WER[2]x19	WER[1]x9.1	WER[1]x 212
Mass-based (kg/day)	WER[1]x0.15	WER[2]x0.64	WER[1]x0.31	WER[1]x7.3

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.96. Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies existing at the time of permit issuance, reissuance, or modification.

Wet-weather waste load allocations for the grouped storm water permittees are equal to the total loading capacity minus the load allocations for open space and direct air deposition and the waste load allocations for the POTWs. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.

Storm water wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 3.1×10^{-9} x daily volume(L) – 1.95
Copper	WER[1] x 1.7×10^{-8} x daily volume (L) – 10
Lead	WER[1] x 6.2×10^{-8} x daily volume (L) – 4.2
Zinc	WER[1] x 1.6×10^{-7} x daily volume (L) – 90

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

The combined storm water waste load allocation is apportioned between the different storm water categories by their percent area of the portion of the watershed served by storm drains.

MS4 wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x 2.8×10^{-9} x daily volume(L) – 1.8
Copper	WER[1] x 1.5×10^{-8} x daily volume (L) – 9.5
Lead	WER[1] x 5.6×10^{-8} x daily volume (L) – 3.85
Zinc	WER[1] x 1.4×10^{-7} x daily volume (L) – 83

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) *(for point sources)*	**Caltrans wet-weather WLAs (total recoverable metals):**

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x $5.3\text{x}10^{-11}$ x daily volume(L) – 0.03
Copper	WER[1] x $2.9\text{x}10^{-10}$ x daily volume (L) – 0.2
Lead	WER[1] x $1.06\text{x}10^{-9}$ x daily volume (L) – 0.07
Zinc	WER[1] x $2.7\text{x}10^{-9}$ x daily volume (L) – 1.6

General Industrial wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x $1.6\text{x}10^{-10}$ x daily volume(L) – 0.11
Copper	WER[1] x $8.8\text{x}10^{-10}$ x daily volume (L) – 0.5
Lead	WER[1] x $3.3\text{x}10^{-9}$ x daily volume (L) – 0.22
Zinc	WER[1] x $8.3\text{x}10^{-9}$ x daily volume (L) – 4.8

General Construction wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x $5.9\text{x}10^{-11}$ x daily volume(L) – 0.04
Copper	WER[1] x $3.2\text{x}10^{-10}$ x daily volume (L) – 0.2
Lead	WER[1] x $1.2\text{x}10^{-9}$ x daily volume (L) – 0.08
Zinc	WER[1] x $3.01\text{x}10^{-}9$ x daily volume (L) – 4.8

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

Each storm water permittee under the general industrial and construction storm water permits will receive individual waste load allocations per acre based on the total acres of their facility.

Individual General Construction or Industrial Permittees WLAs (total recoverable metals):

Metal	Waste Load Allocation (g/day/acre)
Cadmium	WER[1] x $7.6\text{x}10^{-12}$ x daily volume(L) – $4.8\text{x}10^{-6}$
Copper	WER[1] x $4.2\text{x}10^{-11}$ x daily volume (L) – $2.6\text{x}10^{-5}$
Lead	WER[1] x $1.5\text{x}10^{-10}$ x daily volume (L) – $1.04\text{x}10^{-5}$
Zinc	WER[1] x $3.9\text{x}10^{-10}$ x daily volume (L) – $2.2\text{x}10^{-4}$

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)
(for point sources)</td><td>Other NPDES Permits

Concentration-based wet-weather waste load allocations apply to the other NPDES permits* that discharge to all reaches of the Los Angeles River and its tributaries.

Wet-weather WLAs for other permits (total recoverable metals)
<table>
<tr><th>Cadmium (µg /L)</th><th>Copper (µg /L)</th><th>Lead (µg /L)</th><th>Zinc (µg /L)</th></tr>
<tr><td>WER[1] x 3.1</td><td>WER[1] x 17</td><td>WER[1] x 62</td><td>WER[1] x 159</td></tr>
</table>[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

* “Other NPDES permits” refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.</td></tr>
<tr><td>Margin of Safety</td><td>There is an implicit margin of safety that stems from the use of conservative values for the translation from total recoverable to the dissolved fraction during the dry and wet periods. In addition, the TMDL includes a margin of safety by evaluating wet-weather conditions separately from dry-weather conditions, which is in effect, assigning allocations for two distinct critical conditions. Furthermore, the use of the wet-weather model to calculate load allocations for open space can be applied to the margin of safety because it tends to overestimate loads from open spaces, thus reducing the available waste load allocations to the permitted discharges. An additional explicit margin of safety is provided in Reaches 1-4 and Burbank Western Channel for which a site-specific WER has been developed. Specifically, while the copper targets and loading capacity are adjusted based on the final WER of 3.96, only the WLAs for Tillman WRP, LA-Glendale WRP, and Burbank WRP are adjusted using the site-specific WER until additional data are collected to determine whether the site-specific WER is fully protective of aquatic life in all reaches and can be appropriately applied to all LAs and WLAs.</td></tr>
<tr><td>Implementation</td><td>The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the City of Long Beach MS4, the Caltrans storm water permit, major NPDES permits, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board’s Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement.</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The Regional Board shall reconsider this TMDL by January 11, 2011 based on additional data obtained from special studies. Table 7-13-2 presents the implementation schedule for the responsible permittees. **Implementation of WERs** The copper WER of 3.96 for Reaches 1-4 of the Los Angeles River and Burbank Western Channel shall apply until this TMDL is reconsidered. At the time this TMDL is reconsidered, the WER for Reaches 1-4 and Burbank Western Channel may be modified or revert back to a default of 1.0 unless additional data have been collected that support application of a WER to all WLAs and LAs, or confirm continued application of the site-specific WER to the WLAs for the POTWs only. Any WER that is incorporated into a discharger's permit shall include an appropriate reopener that authorizes the Regional Board to modify the WER as appropriate to accommodate new information. **Non storm water NPDES permits (including POTWs, other major, minor, and general permits):** Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs. **General industrial storm water permits:** The Regional Board will develop a watershed-specific general industrial storm water permit to incorporate waste load allocations. <u>Dry-weather implementation</u> Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the reach-specific concentration-based waste load allocations assigned to the "other NPDES permits". The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. <u>Wet-weather implementation</u> General industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors and apply until no later than January 11, 2016. **Interim wet-weather WLAs for general industrial storm water permittees (total recoverable metals)*** **Cd (µg/L)** / **Cu(µg/L)** / **Pb(µg/L)** / **Zn(µg/L)** 15.9 / 63.6 / 81.6 / 117 *Based on USEPA benchmarks for industrial storm water sector Until January 11, 2011, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After January 11, 2011, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations. The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General construction storm water permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. <u>Dry-weather implementation</u> Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3.and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ. <u>Wet-weather implementation</u> By January 11, 2013, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration by January 11, 2014. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs by January 11, 2015. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board by January 11, 2014, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations. **MS4 and Caltrans permits** Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to dry-weather reach-specific numeric targets.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	Each municipality and permittee will be required to meet the storm water waste load allocations shared by the two MS4s and Caltrans permittees at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach. The watershed is divided into five jurisdictional groups based on the subwatersheds of the tributaries that drain to each reach of the river, as presented in Table 7-13-3. Each jurisdictional group shall achieve compliance in prescribed percentages of its subwatershed(s), with total compliance to be achieved within 22 years. Jurisdictional groups can be reorganized or subdivided upon approval by the Executive Officer.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. For dry weather, critical flows for each reach are established from the long-term flow records (1988-2000) generated by stream gages located throughout the watershed and in selected reaches. The median dry-weather urban runoff plus the combined design capacity of the three major POTWs is selected as the critical flow since most of the flow is from effluent which results in a relatively stable dry-weather flow condition. In areas where there are no flow records, an area-weighted approach is used to assign flows to these reaches. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation for wet weather varies by storm. Given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.
Compliance Monitoring and Special Studies	Effective monitoring will be necessary to assess the condition of the Los Angeles River and its tributaries and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to the Los Angeles River. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	**Ambient Monitoring** An ambient monitoring program is necessary to assess water quality throughout the Los Angeles River and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall sample for total recoverable metals, dissolved metals, including cadmium and zinc, and hardness once per month at each ambient monitoring location at least until the TMDL is re-considered at year 5. The reported detection limits shall be below the hardness adjusted CTR criteria. Eight ambient monitoring points currently exist in the Los Angeles River and its tributaries as part of the City of Los Angeles Watershed Monitoring Program. These monitoring points could be used to assess water quality. **Ambient Monitoring Points** — **Reaches and Tributaries** White Oak Avenue — LA River 6, Aliso Creek, McCoy Creek, Bell Creek Sepulveda Boulevard — LA River 5, Bull Creek Tujunga Avenue — LA River 4, Tujunga Wash Colorado Boulevard — LA River 3, Burbank Western Channel, Verdugo Wash Figueroa Street — LA River 3, Arroyo Seco Washington Boulevard — LA River 2 Rosecrans Avenue — LA River 2, Rio Hondo (gage just above Rio Hondo) Willow Street — LA River 1, Compton Creek (gage at Wardlow) **TMDL Effectiveness Monitoring** The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for assessing progress in reducing pollutant loads to achieve the TMDL. Each jurisdictional group is required to submit for approval by the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL (See Table 7-13.2), which requires attainment of the applicable waste load allocations in prescribed percentages of each subwatershed over a 22-year period. The monitoring locations specified for the ambient monitoring program may be used as effectiveness monitoring locations.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting dry-weather waste load allocations if the in-stream pollutant concentration or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting wet-weather waste load allocations if the loading at the downstream monitoring location is equal to or less then the wet-weather waste load allocation. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. The Tillman, LA-Glendale, and Burbank POTWs, and the remaining permitted discharges in the watershed will have effluent monitoring requirements to ensure compliance with waste load allocations. Additionally, the Tillman, LA-Glendale, and Burbank POTWs shall conduct additional receiving water monitoring to verify that water quality conditions are similar to those of the 2008 copper WER study period. Monitoring is also required to determine if the WER-based copper WLAs will achieve downstream water quality standards. This additional monitoring shall be required through the POTWs' NPDES permit monitoring and reporting programs or other Regional Board required monitoring programs. The Regional Board will evaluate the WER-based copper WLAs based on potential changes in the chemical characteristics of the water body that could impact the calculation or application of the WER and will revise the WERs and copper WLAs, if necessary, to ensure protection of beneficial uses. **Special Studies** The implementation schedule (see Table 7-13.2) allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL by January 11, 2011 in light of the findings of these studies. Studies may include:

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	• Refined flow estimates for the Los Angeles River mainstem and tributaries where there presently are no flow gages and for improved gaging of low-flow conditions. • Water quality measurements, including a better assessment of hardness, water chemistry data (e.g., total suspended solids and organic carbon) that may refine the use of metals partitioning coefficients. • Effects studies designed to evaluate site-specific toxic effects of metals on the Los Angeles River and its tributaries. • Source studies designed to characterize loadings from background or natural sources • Review of water quality modeling assumptions including the relationship between metals and total suspended solids as expressed in the potency factors and buildup and washoff and transport coefficients. • Evaluation of aerial deposition and sources of aerial deposition. • POTWs that are unable to demonstrate compliance with final waste load allocations must conduct source reduction audits by January 11, 2008. • POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must prepare work plans, with time schedules to allow for the installation advanced treatment. The work plan must be submitted January 11, 2010.

Table 7-13.2 Los Angeles River and Tributaries Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate waste load allocations into NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal, or re-opener.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies. POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must submit work plans.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
NON-STORM WATER NPDES PERMITS (INCLUDING POTWS, OTHER MAJOR, MINOR, AND GENERAL PERMITS)	
Upon permit issuance, renewal, or re-opener	The non-storm water NPDES permits shall achieve waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the SIP or other applicable engineering practices authorized under federal regulations. Effluent limitations based on WER-adjusted WLAs shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of a facility's treatment technologies existing at the time of permit issuance, reissuance, or modification. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	The general industrial storm water permitees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
January 11, 2011	The general industrial storm water permits shall achieve interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final waste load allocations.

Date	Action
January 11, 2016	The general industrial storm water permits shall achieve final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
January 11, 2013	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
January 11, 2014	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs.
January 11, 2015	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
April 11, 2007	In response to an order issued by the Executive Officer, each jurisdictional group must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both TMDL effectiveness monitoring and ambient monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence within 6 months.
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	Each jurisdictional group shall provide a written report to the Regional Board outlining the how the subwatersheds within the jurisdictional group will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	Each jurisdictional group shall demonstrate that 50% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather waste load allocations and 25% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather waste load allocations.
January 11, 2020	Each jurisdictional group shall demonstrate that 75% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs.

Date	Action
January 11, 2024	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs and 50% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather WLAs.
January 11, 2028	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting both the dry-weather and wet-weather WLAs.

Table 7-13.3 Los Angeles River and Tributaries Metals TMDL: Jurisdictional Groups

Jurisdictional Group	Responsible Jurisdictions & Agencies		Subwatershed(s)
1	Carson County of Los Angeles City of Los Angeles Compton Huntington Park Long Beach Lynwood Signal Hill Southgate Vernon		Los Angeles River Reach 1 and Compton Creek
2	Alhambra Arcadia Bell Bell Gardens Bradbury Carson Commerce Compton County of Los Angeles Cudahy Downey Duarte El Monte Glendale Huntington Park Irwindale La Canada Flintridge	Long Beach City of Los Angeles Lynwood Maywood Monrovia Montebello Monterey Park Paramount Pasadena Pico Rivera Rosemead San Gabriel San Marino Sierra Madre South El Monte South Pasadena Southgate Temple City Vernon	Los Angeles River Reach 2, Rio Hondo, Arroyo Seco, and all contributing sub watersheds
3	City of Los Angeles County of Los Angeles Burbank Glendale La Canada Flintridge Pasadena		Los Angeles River Reach 3, Verdugo Wash, Burbank Western Channel
4-5	Burbank Glendale City of Los Angeles County of Los Angeles San Fernando		Los Angeles River Reach 4, Reach 5, Tujunga Wash, and all contributing subwatersheds
6	Calabasas City of Los Angeles County of Los Angeles Hidden Hills		Los Angeles River Reach 6, Bell Creek, and all contributing subwatersheds

7-14 Ballona Creek Estuary Toxic Pollutants TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:
The State Water Resources Control Board on October 20, 2005.
The Office of Administrative Law on December 15, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

The effective date of this TMDL is January 11, 2006.

The following tables include the elements of this TMDL.

Table 7-14.1. Ballona Creek Estuary Toxic Pollutants TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Ballona Creek and Ballona Creek Estuary (Estuary) is on the Clean Water Act Section 303(d) list of impaired waterbodies for cadmium, copper, lead, silver, zinc, chlordane, DDT, PCBs and PAHs in sediments. The following designated beneficial uses are impaired by these toxic pollutants: water contact recreation (REC1); non-contact water recreation (REC2); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations)	Numeric water quality targets are based on the sediment quality guidelines compiled by the National Oceanic and Atmospheric Administration, which are used in evaluating waterbodies within the Los Angeles Region for development of the 303(d) list. The Effects Range-Low (ERLs) guidelines are established as the numeric targets for sediments in Ballona Creek Estuary. **Metal Numeric Targets (mg/kg)** Cadmium: 1.2; Copper: 34; Lead: 46.7; Silver: 1.0; Zinc: 150 **Organic Numeric Targets (µg/kg)** Chlordane: 0.5; DDTs: 1.58; Total PCBs: 22.7; Total PAHs: 4,022

Metal Numeric Targets (mg/kg)

Cadmium	Copper	Lead	Silver	Zinc
1.2	34	46.7	1.0	150

Organic Numeric Targets (µg/kg)

Chlordane	DDTs	Total PCBs	Total PAHs
0.5	1.58	22.7	4,022

Element	Key Findings and Regulatory Provisions
Source Analysis	Urban storm water has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban storm water (i.e., copper, lead, zinc, and to a lesser degree cadmium) are consistently associated with suspended solids. Because metals are typically associated with fine particles in storm water runoff, they have the potential to accumulate in estuarine sediments where they may pose a risk of toxicity. McPherson et al.[1] estimated that 83% of the cadmium and 86% of the lead were associated with the particle phase in Ballona Creek. Similar to metals, the majority of organic constituents in storm water are associated with particulates, measured concentrations of PAHs, phthalates, and organochlorine compounds in Sepulveda Channel, Centinela Creek, and Ballona Creek found that the majority of these compounds occurred in association with suspended solids. There is toxicity associated with suspended solids in urban runoff discharged from Ballona Creek, as well as with the receiving water sediments. This toxicity is likely attributed to metals and PAHs associated with the suspended sediments. Nonpoint sources are not considered a significant source of toxic pollutants in this TMDL. Nonpoint sources are urban runoff from the Ballona Wetland, since this area discharges directly to the Estuary through a tide gate, and direct atmospheric deposition. The Ballona Wetlands cover approximately 460 acres or 0.6% of the watershed, therefore, loading from this source is considered insignificant. Direct atmospheric deposition of metals and PAHs is considered insignificant because the portion of the Ballona Creek watershed covered by water is small, approximately 480 acres or 0.6% of the watershed. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition are accounted for in the storm water runoff.
Loading Capacity	TMDLs are developed for cadmium, copper, lead, silver, zinc, chlordane, DDT, PCBs and PAHs within the sediments of the Ballona Creek Estuary. The loading capacity for Ballona Creek Estuary is calculated by multiplying the numeric targets by the average annual deposition of fine sediment, defined as silts (grain size 0.0625 millimeters) and smaller, within the Estuary by the bulk density of the sediment. The average annual fine sediment deposited is 5,004 cubic meters per year (m^3/yr) and the bulk density is 1.42 metric tons per cubic meter (mt/m^3). The TMDL is set equal to the loading capacity. **Metals Loading Capacity (kilograms/year)** Cadmium: 8.5; Copper: 241.6; Lead: 332; Silver: 7.1; Zinc: 1,066 **Organics Loading Capacity (grams/year)** Chlordane: 3.55; DDTs: 11.2; Total PCBs: 161; Total PAHs: 28,580

Metals Loading Capacity (kilograms/year)

Cadmium	Copper	Lead	Silver	Zinc
8.5	241.6	332	7.1	1,066

Organics Loading Capacity (grams/year)

Chlordane	DDTs	Total PCBs	Total PAHs
3.55	11.2	161	28,580

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Load Allocations
(for nonpoint sources)</td><td>Load allocations (LA) are assigned to nonpoint sources for Ballona Creek Estuary. Load allocations are developed for open space and direct atmospheric deposition.

The mass-based load allocation for open space is equal to the percentage of the watershed covered by the Ballona Wetlands (0.6%) multiplied by the total loading capacity.

Metals Load Allocations for Open Space (kg/yr)<table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>0.05</td><td>1.4</td><td>2</td><td>0.04</td><td>6</td></tr></table>
Organics Load Allocations for Open Space (g/yr)<table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>0.02</td><td>0.1</td><td>1</td><td>160</td></tr></table>
The mass-based load allocation for direct atmospheric deposition is equal to the percentage of the watershed covered by water (0.6%) multiplied by the total loading capacity.

Metals Load Allocations for Direct Atmospheric Deposition (kg/yr)<table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>0.05</td><td>1.4</td><td>2</td><td>0.04</td><td>6</td></tr></table>
Organics Load Allocations for Direct Atmospheric Deposition (g/yr)<table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>0.02</td><td>0.1</td><td>1</td><td>170</td></tr></table></td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>Waste load allocations (WLA) are assigned to point sources for the Ballona Creek watershed. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocations from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

Metals Waste Load Allocations for Storm Water (kg/yr)<table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>8.4</td><td>238.8</td><td>328</td><td>7.02</td><td>1,054</td></tr></table>
Organics Waste Load Allocations for Storm Water (g/yr)<table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>3.51</td><td>11</td><td>159</td><td>28,250</td></tr></table></td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach. **Metals Storm Water WLAs Apportioned between Permits (kg/yr)** <table><tr><th></th><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>MS4 Permittees</td><td>8.0</td><td>227.3</td><td>312.3</td><td>6.69</td><td>1003</td></tr><tr><td>Caltrans</td><td>0.11</td><td>3.2</td><td>4.4</td><td>0.09</td><td>14</td></tr><tr><td>General Construction</td><td>0.23</td><td>6.6</td><td>9.1</td><td>0.20</td><td>29</td></tr><tr><td>General Industrial</td><td>0.06</td><td>1.7</td><td>2.3</td><td>0.05</td><td>7</td></tr></table> **Organics Storm Water WLAs Apportioned between Permits (g/yr)** <table><tr><th></th><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>MS4 Permittees</td><td>3.34</td><td>10.56</td><td>152</td><td>26,900</td></tr><tr><td>Caltrans</td><td>0.05</td><td>0.15</td><td>2</td><td>400</td></tr><tr><td>General Construction</td><td>0.10</td><td>0.31</td><td>4</td><td>800</td></tr><tr><td>General Industrial</td><td>0.02</td><td>0.08</td><td>1</td><td>200</td></tr></table> Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility. **Metals per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (g/yr/ac)** <table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>0.1</td><td>3</td><td>4</td><td>0.1</td><td>13</td></tr></table> **Organics per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (mg/yr/ac)** <table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>0.04</td><td>0.14</td><td>2</td><td>350</td></tr></table> Concentration-based waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations. **Metals Concentration-based Waste Load Allocations (mg/kg)** <table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>1.2</td><td>34</td><td>46.7</td><td>1.0</td><td>150</td></tr></table> **Organic Concentration-based Waste Load Allocations (µg/kg)** <table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>0.5</td><td>1.58</td><td>22.7</td><td>4,022</td></tr></table>
Margin of Safety	An implicit margin of safety is applied through the use of the more protective sediment quality guideline values. The ERLs were selected over the higher ERMs as the numeric targets.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-14.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented through NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying applicable engineering practices authorized under federal regulations. The minor and general non-storm water NPDES permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations. **General Industrial Storm Water Permit:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations. Concentration-based permit limits may be set to achieve the mass-based waste load allocations. These concentration-based limits would be equal to the concentration-based waste load allocations assigned to the other NPDES permits. It is expected that permit writers will translate the waste load allocations into BMPs, based on BMP performance data. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. The general industrial storm water permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General Construction Storm Water Permit:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed specific general construction storm water permit developed by the Regional Board. Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with waste load allocations if they implement these Regional Board approved BMPs. All general construction permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with waste load allocations. **MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Ballona Creek watershed is the City of Los Angeles. Each municipality and permittee will be required to meet the waste load allocations at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the numeric waste load allocations. We expect that reductions to be achieved by each BMP will be documented and that sufficient monitoring will be put in place to verify that the desired reductions are achieved. The permits should also provide a mechanism to adjust the required BMPs as necessary to ensure their adequate performance. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	There is a high degree of inter- and intra-annual variability in sediments deposited at the mouth of Ballona Creek. This is a function of the storms, which are highly variable between years. Studies by the Army Corps of Engineers have shown that sediment delivery to Ballona Creek is related to the size of the storm (USACE, 2003). The TMDL is based on a long-term average deposition patterns over a 10-year period from 1991 to 2001. This time period contains a wide range of storm conditions and flows in the Ballona Creek watershed. Use of the average condition for the TMDL is appropriate because issues of sediment effects on benthic communities and potential for bioaccumulation to higher trophic levels occurs over long time periods.
Monitoring	Effective monitoring will be required to assess the condition of Ballona Creek and Estuary and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutants loading to the Ballona Creek Estuary. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient Monitoring** An ambient monitoring program is necessary to assess water quality throughout Ballona Creek and its tributaries and to assess the progress being made to remove the toxic pollutant impairments in Ballona Creek Estuary sediments. Data on background water quality for organics and sediments will help refine the numeric targets and waste load allocations and assist in the effective placement of BMPs. In addition, fish and mussel tissue data is required in Ballona Creek Estuary to confirm the fish tissue listings. Water quality samples shall be collected from Ballona Creek and Estuary monthly and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs and total PAHs at detection limits that are at or below the minimum levels until the TMDL is reconsidered in the sixth year. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. Special emphasis should be placed on achieving detection limits that will allow evaluation relative to the CTR standards. If these can not be achieved with conventional techniques, then a special study should be proposed to evaluate concentrations of organics.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Storm water monitoring conducted as part of the MS4 storm water monitoring program should continue to provide assessment of water quality during wet-weather conditions and loading estimates from the watershed to the Estuary. If analysis of chlordane, dieldrin, DDT, total PCBs or total PAHs are not currently part of the sampling programs these organics should be added. In addition, special emphasis should be placed on achieving lower detection limits for DDTs, PCBs and PAHs. The MS4 and Caltrans storm water permittees are jointly responsible for conducting bioaccumulation testing of fish and mussel tissue within the Estuary. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to confirm the 303(d) listing or delisting, as applicable. Representative sediment sampling locations shall be randomly selected within the Estuary and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs and total PAHs at detection limits that are lower than the ERLs. Sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity testing. Initial sediment monitoring should be done quarterly in the first year of the TMDL to define the baseline and semi-annually, thereafter, to evaluate effectiveness of the BMPs until the TMDL is reconsidered in the sixth year. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the initial year of quarterly testing and the results compared. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28-day testing. **TMDL Effectiveness Monitoring** The water quality samples collected during wet weather as part of the MS4 storm water monitoring program shall be analyzed for total dissolved solids, settable solids and total suspended solids if not already part of the existing sampling program. Sampling shall be designed to collect sufficient volumes of settable and suspended solids to allow for analysis of cadmium, copper, lead, silver, zinc, chlordane, dieldrin, total DDT, total PCBs, total PAHs, and total organic carbon in the bulk sediment.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Semi-annually, representative sediment sampling locations shall be randomly selected within the Estuary and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs, and total PAHs at detection limits that are lower than the ERLs. The sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. Toxicity shall be indicated by an amphipod survival rate of 70% or less in a single test. Accelerated monitoring shall be conducted to confirm toxicity at stations identified as toxic. Accelerated monitoring shall consist of six additional tests, approximately every two weeks, over a 12-week period. If the results of any two of the six accelerated tests are less than 90% survival, then the MS4 and Caltrans permittees shall conduct a Toxicity Identification Evaluation (TIE). The TIE shall include reasonable steps to identify the sources of toxicity and steps to reduce the toxicity. The Phase I TIE shall include the following treatments and corresponding blanks: baseline toxicity; particle removal by centrifugation; solid phase extraction of the centrifuged sample using C8, C18, or another media; complexation of metals using ethylenediaminetetraacetic acid (EDTA) addition to the raw sample; neutralization of oxidants/metals using sodium thiosulfate addition to the raw sample; and inhibition of organo-phosphate (OP) pesticide activation using piperonyl butoxide addition to the raw sample (crustacean toxicity tests only). Bioaccumulation monitoring of fish and mussel tissue within the Estuary shall be conducted. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to assess the effectiveness of the TMDL. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general industrial permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in contaminate loads to the MS4 system.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	**Special Studies** Special studies are recommended to refine source assessments, to provide better estimates of loading capacity, and to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies. Special studies may include: • Evaluation and use of low detection level techniques to evaluate water quality concentrations for those contaminants where standard detection limits cannot be used to assess compliance for CTR standards or are not sufficient for estimating source loadings from tributaries and storm water. • Developing and implementing a monitoring program to collection the data necessary to apply a multiple lines of evidence approach. • Evaluation and use of sediment TIEs to evaluate causes of any recurring sediment toxicity. • Evaluate partitioning coefficients between water column and sediment to assess the contribution of water column discharges to sediment concentrations in the Estuary. • Studies to refine relationship between pollutants and suspended solids aimed at better understanding of the delivery of pollutants to the watershed. • Studies to understand transport of sediments to the estuary, including the relationship between storm flows, sediment loadings to the estuary, and sediment deposition patterns within the estuary. • Studies to evaluate effectiveness of BMPs to address pollutants and/or sediments.

1 McPherson, T.N., S.J. Burian, H.J. Turin, M.K. Stenstrom and I.H. Suffet. 2002. Comparison of Pollutant Loads in Dry and Wet Weather Runoff in a Southern California Urban Watershed. *Water Science and Technology* 45:255-261.

Table 7-14.2. Ballona Creek Estuary Toxic Pollutants TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations for sediment into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal or re-opener.
Within 6 months after the effective date of the State Board adopted sediment quality objectives and implementation policy	The Regional Board will re-assess the numeric targets and waste load allocations for consistency with the State Board adopted sediment quality objectives.
5 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board result of any special studies.
6 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
7 years after effective date of the TMDL	The non-storm water NPDES permits shall achieve the concentration-based waste load allocations for sediment per provisions allowed for in NPDES permits.
GENERAL INDUSTRIAL STORM WATER PERMIT	
7 years after effective date of the TMDL	The general industrial storm water permits shall achieve the mass-based waste load allocations for sediment per provisions allowed for in NPDES permits. Permits shall allow an iterative BMP process including BMP effectiveness monitoring to achieve compliance with permit requirements.
GENERAL CONSTRUCTION STORM WATER PERMIT	
7 years from the effective date of the TMDL	The construction industry will submit the results of the BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
8 years from the effective date of the TMDL	The Regional Board will consider results of the BMP effectiveness studies and consider approval of BMPs no later than six years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer, ambient monitoring shall commence within 6 months.

Date	Action
5 years after effective date of TMDL (Draft Report) 5 ½ years after effective date of TMDL (Final Report)	The MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining how they will achieve the waste load allocations for sediment to Ballona Creek Estuary. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
7 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 25% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
9 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
11 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
15 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.

7-16 Calleguas Creek Watershed Toxicity TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:
The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on December 22, 2005.
The U.S. Environmental Protection Agency on March 14, 2006.

The effective date of this TMDL is: March 24, 2006.

Table 7-16.1. Calleguas Creek Watershed Toxicity TMDL: Elements

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Problem Statement	Discharge of wastes containing chlorpyrifos, diazinon, other pesticides and/or other toxicants to Calleguas Creek, its tributaries and Mugu Lagoon cause exceedances of water quality objectives for toxicity established in the Basin Plan. Elevated levels of chlorpyrifos have been found in fish tissue samples collected from a segment of Calleguas Creek. Chlorpyrifos and diazinon are organophosphate pesticides used in both agricultural and urban settings. Excessive chlorpyrifos and diazinon can cause aquatic life toxicity in inland surface and estuarine waters such as Calleguas Creek and Mugu Lagoon. The California 2002 303(d) list of impaired waterbodies includes listings for "water column toxicity," "sediment toxicity," chlorpyrifos in fish tissue," and "organophosphate pesticides in water" for various reaches of Calleguas Creek, its tributaries and Mugu Lagoon.
Numeric Targets	A water column toxicity target of 1.0 toxicity unit – chronic (1.0 TUc) is established to address toxicity in reaches where the toxicant has not been identified through a Toxicity Identification Evaluation (TIE) (unknown toxicity). TU_C = Toxicity Unit Chronic = 100/NOEC (no observable effects concentration) A sediment toxicity target was defined in the technical report for reaches where the sediment toxicant has not been identified through a TIE. The target is based on the definition of a toxic sediment sample as defined by the September 2004 Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List (SWRCB). Chlorpyrifos Numeric Targets (ug/L) Chronic (4 day average) / Acute (1 hour average) Freshwater: 0.014 / 0.025 Saltwater (Mugu Lagoon): 0.009 / 0.02

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td>Numeric Targets (continued)</td><td>Diazinon Numeric Targets (ug/L)
<table>
<tr><th></th><th>Chronic
(4 day average)</th><th>Acute
(1 hour average)</th></tr>
<tr><td>Freshwater</td><td>0.10</td><td>0.10</td></tr>
<tr><td>Saltwater (Mugu Lagoon)</td><td>0.40</td><td>0.82</td></tr>
</table>
Additionally, the diazinon criteria selected as numeric targets are currently under review by the USEPA. If water quality objectives become available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target.</td></tr>
<tr><td>Source Analysis</td><td>Source analysis determined that agricultural and urban uses are the largest sources of chlorpyrifos and diazinon in the watershed. Urban use of diazinon and chlorpyrifos is unlikely to be a long-term source to the Calleguas Creek Watershed (CCW) as both of these pesticides have been banned for sale for non-agricultural uses on December 31, 2005 by federal regulation. As a result, the proportion of the loading from urban sources will likely decrease after December 2005.

Chlorpyrifos – Sources by Use
<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>66%</td><td>80%</td></tr>
<tr><td>Urban</td><td>23%</td><td>20%</td></tr>
<tr><td>POTW</td><td>11%</td><td><1%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>
Diazinon – Sources by Use
<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>30%</td><td>1%</td></tr>
<tr><td>Urban</td><td>13%</td><td>62%</td></tr>
<tr><td>POTW</td><td>57%</td><td>37%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table></td></tr>
</table>

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Linkage Analysis	Water quality modeling established the linkage of sources of chlorpyrifos and diazinon in the CCW to observed water quality data. The linkage analysis qualitatively describes the connection between water column concentrations and sediment and fish tissue concentrations. The qualitative analysis demonstrates that the water column analysis conducted by laboratories implicitly includes sediment associated diazinon and chlorpyrifos loads transported to receiving waters as almost all water quality data do not differentiate between dissolved and particulate fractions. The linkage analysis assumes a reduction in water column concentrations will result in a reduction in fish tissue as chlorpyrifos in freshwater fish tissue rapidly depurate within several days of removal from exposure. Additionally, as chlorpyrifos preferentially binds to sediment the linkage analysis suggests that sediment concentrations of chlorpyrifos will need to decrease to achieve water quality numeric targets. The modeling approach reflects the uncertainty in current conditions and the potential impacts of watershed planning actions that may affect those conditions. A detailed description of the model is provided in an Attachment to the TMDL Technical Report.
Wasteload Allocations (WLA)	**<u>Major point sources:</u>** A wasteload of 1.0 TU_c is allocated to the major point sources (POTWs) discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established and based on the numeric target for POTWs. The concentration based wasteload allocations for Camarillo and Camrosa WRPs for chlopyrifos is reduced by a 5% margin of safety from the numeric targets. This margin of safety is applied to the Calleguas Creek and Revelon subwatersheds based on uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations. **<u>Chlorpyrifos WLAs, ug/L</u>**

POTW	Interim WLA Chronic (4 day)	Final WLA Acute (1hour)	Final WLA Chronic (4 day)
Hill Canyon WWTP	0.030	0.025	0.014
Simi Valley WQCP	0.030	0.025	0.014
Ventura County (Moorpark) WTP	0.030	0.025	0.014
Camarillo WRP	0.030	0.024	0.0133
Camrosa WRP	0.030	0.024	0.0133

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Wasteload Allocations (WLA) (continued)	**<u>Diazinon WLAs, ug/L</u>** | | Interim Acute (1 hour) | Interim Chronic (4 day) | Final WLA (Acute or Chronic) | POTW Hill Canyon WWTP 0.567 0.312 0.10 Simi Valley WQCP 0.567 0.312 0.10 Ventura County (Morepark) WTP 0.567 0.312 0.10 Camarillo WRP 0.567 0.312 0.10 Camrosa WRP 0.567 0.312 0.10 A wasteload of 1.0 TU_c is allocated to Urban Stormwater Co-Permittees (MS4) discharges to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established for MS4 discharges. **<u>Chlorpyrifos WLAs, ug/L</u>** Interim WLA (4 day): 0.45 — Final WLA (4 day): 0.014 **<u>Diazinon WLAs, ug/L</u>** Interim WLA Acute (1 hour): 1.73 — Interim WLA Chronic (4 day): 0.556 — Final WLA Acute and Chronic: 0.10 **<u>Minor point sources:</u>** Minor sources include NPDES permittees other than POTWs, and Urban Stormwater Co-Permittees (MS4s) discharging to the Calleguas Creek Watershed. A wasteload of 1.0 TU_c is allocated to the minor point sources discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Wasteload Allocations (WLA) (continued)	**Chlorpyrifos WLAs, ug/L** Interim WLA: Chronic (4 day) 0.45 Final WLA: Acute (1hour) 0.025; Chronic (4 day) 0.014 **Diazinon WLAs, ug/L** Interim WLA Acute (1 hour): 1.73 Interim WLA Chronic (4 day): 0.556 Final WLA Acute and Chronic: 0.10
Load Allocations	**Non Point Source Dischargers:** A load of 1.0 TU_c is allocated to nonpoint sources discharging to the Calleguas Creek Watershed. Additionally, the following loads for chlorpyrifos and diazinon are established and based on the numeric targets. These loads apply to dischargers in accordance with the subwatershed into which the dischargers discharge. The concentration based load allocations for the Calleguas Creek and Revelon subwatersheds for chlopyrifos is reduced by a 5% margin of safety from the numeric targets. This margin of safety is based on uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations.

Chlorpyrifos Load Allocations, ug/L

Subwatershed	Interim Acute (1-hour)	Interim Chronic (4-day)	Final Acute (1-hour)	Final Chronic (4-day)
Arroyo Simi	2.57	0.810	0.025	0.014
Las Posas	2.57	0.810	0.025	0.014
Conejo	2.57	0.810	0.025	0.014
Calleguas	2.57	0.810	0.024	0.0133
Revelon	2.57	0.810	0.024	0.0133
Mugu Lagoon	2.57	0.810	0.025	0.014

Diazinon Load Allocations, ug/L

Interim LA Acute (1 hour)	Interim LA Chronic (4 day)	Final LA Acute and Chronic
0.278	0.138	0.10

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Margin of Safety	In addition to the implicit margin of safety achieved by conservative assumptions and by using a concentration based TMDL, an explicit margin of safety of 5% has been added to the targets for chlorpyrifos in the Calleguas and Revolon subwatersheds and to the Camarillo and Camrosa WRPs to address uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations. The Calleguas and Revolon subwatersheds include those reaches listed for sediment toxicity and chlorpyrifos in fish tissue.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. The phase-out of chlorpyrifos and diazinon is expected to reduce loads from urban and POTWs significantly by 2007. Use of diazinon in agriculture has declined considerably between 1998 and 2003. Conversely, chlorpyrifos use in agriculture has remained relatively stable over the same period. The phase out of chlorpyrifos and diazinon as well as population growth will cause an increase in the use of replacement pesticides (e.g. pyrethroids) in the urban environment and may have an impact on water and/or sediment toxicity. Additionally, population growth may affect an increase in the levels of chlorpyrifos and diazinon loading in the CCW from imported products which contain residues of these pesticides.
Critical Conditions	The critical condition in this TMDL is defined as the flowrate at which the model calculated the greatest in-stream diazinon or chlorpyrifos concentration in comparison to the appropriate criterion. The critical condition for chlorpyrifos was in dry weather based on a chronic numeric target; the critical condition for diazinon was in wet weather based on an acute numeric target except in Mugu Lagoon where it was in dry weather based on the chronic numeric target.
Implementation Plan	WLAs established for the major points sources, including POTWs in the CCW will be implemented through NPDES permit effluent limits. The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided. The Regional Board may revise these WLAs based on additional information as described in the Special Studies and Monitoring Section of the Technical Report. The toxicity WLAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance or renewal. Currently, these WLAs would be implemented as a trigger for initiation of the TRE/TIE process as outlined in USEPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits held by dischargers to the CCW.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Implementation Plan (continued)	Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each subwatershed and will be achieved through the implementation of BMPs as outlined below. Evaluation of progress of the TMDL will be determined through the measurement of in-stream water quality and sediment at the base of each of the CCW subwatersheds. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of the TMDL. As shown in Table 7-16.2 the following implementation actions will be taken by the MS4s discharging to the CCW and POTWs located in the CCW: • Plan, develop, and implement an urban pesticides public education program; • Plan, develop, and implement urban pesticide education and chlorpyrifos and diazinon collection program; • Study diazinon and chlorpyrifos replacement pesticides for use in the urban environment; and, • Conduct environmental monitoring as outlined in the Monitoring Plan and NPDES Permits. LAs for chlorpyrifos and diazinon will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP), nonpoint source pollution (i.e. Load Allocations). The LARWQCB is currently developing a Conditional Waiver for Irrigated Lands. Once adopted, the Conditional Waiver Program will implement allocations and attain numeric targets of this TMDL. Compliance with LAs will be measured at the monitoring sites approved by the Executive Officer of the Regional Board through the monitoring program developed as part of the Conditional Waiver, or through a monitoring program that is required by this TMDL. The toxicity LAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit or waiver issuance or renewal. The following implementation actions will be taken by agriculture dischargers located in the CCW: • Enroll for coverage under a waiver of waste discharge requirements for irrigated lands; • Implement monitoring required by this TMDL and the Conditional Waiver program; • Complete studies to determine the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs; and, • Implement appropriate BMPs and monitor to evaluate effectiveness on in-stream water and sediment quality.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Implementation Plan (continued)	The Regional Board may revise this TMDL based on monitoring data and special studies of this TMDL. If the Regional Board revises NPDES permits or the Basin Plan to use other methods of evaluating toxicity or if other information supporting other methods becomes available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target. Additionally, the development of sediment quality guidelines or criteria and other water quality criteria revisions may call for the reevaluation of the TMDL. The Implementation Plan includes this provision for reevaluating the TMDL to consider sediment quality guidelines or criteria and revised water quality objectives and the results of implementation studies, if appropriate.

Table 7-16.2. Overall Implementation Schedule for Calleguas Creek Watershed Toxicity TMDL

Implementation Action		Responsible Party	Date
1	Interim chlorpyrifos and diazinon waste-load allocations apply.[1]	POTW permittees and MS4 Copermittees	Effective date[2]
2	Interim chlorpyrifos and diazinon load allocations apply.[1]	Agricultural Dischargers	Effective date[2]
3	Finalize and submit workplan for integrated Calleguas Creek Watershed Monitoring Program for approval by the Regional Board Executive Officer. [3]	POTW permittees, MS4 Copermittees, and Agricultural Dischargers	6 months after effective date of amendment[2]
4	Initiate Calleguas Creek Watershed Toxicity TMDL Monitoring Program developed under Task 3 workplan.	POTW permittees, MS4 Copermittees, and Agricultural Dischargers	6 months after E.O. approval of Monitoring Program (task 3) workplan.
5	Conduct Special Study #1-Investigate the pesticides that will replace diazinon and chlorpyrifos in the urban environment, their potential impact on receiving waters, and potential control measures.	POTW permittees and MS4 Copermittees	2 years after effective date[2]
6	Conduct Special Study #2 – Consider results of monitoring of sediment concentrations by source/land use type through special study required in Special Study #1 of the OC Pesticides, PCBs and siltation TMDL Implementation Plan. If the special study is not completed through the OC Pesticides, PCBs and Siltation TMDL no consideration is necessary[3]	Agricultural Dischargers[3] and MS4 Copermittees	6 months after completion of CCW OC Pesticides, PCBs and Siltation TMDL sediment concentrations special study.[2]
7	Develop and implement collection program for diazinon and chlorpyrifos and an educational program. Collection and education could occur through existing programs such as household hazardous waste collection events	POTW permittees and MS4 Copermittees	3 years after effective date[2]
8	Develop an Agricultural Water Quality Management Plan in conjunction with the Conditional Waiver for Irrigated Lands, or (if the Conditional Waiver is not adopted in a timely manner) develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP.	Agricultural Dischargers[3]	3 years after effective date[2]
9	Identify the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs.	Agricultural Dischargers[3]	3 years after effective date[2]
10	Implement educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	1 year after E.O. approval of Plan (Task 7)[2]
11	Conduct Special Study #3-Calculation of sediment transport rates in CCW. Consider findings of transport rates developed through Special Study #1 of the OC Pesticides, PCBs and siltation TMDL Implementation Plan. If the special study is not completed through the OCs TMDL, no consideration is necessary.[3]	Agricultural Dischargers[3] and MS4 Copermittees	6 months after completion of CCW OC Pesticides, PCBa and Siltation TMDL sediment transport special study.[2]
12	Begin implementation of BMPs.	Agricultural Dischargers[3]	1 year after E.O. approval of Plan (Task 8)[2]
13	Evaluate effectiveness of BMPs.	Agricultural Dischargers[3]	3 years after E.O. approval of Plan (Task 8)[2]

Implementation Action		Responsible Party	Date
14	Reevaluate the TMDLs, interim or final WLAs and LAs, and implementation schedule based on monitoring data and on the results of Implementation Actions 1-13 and if sediment guidelines are promulgated, or water quality criteria are revised, and/or if targets are achieved without attainment of WLAs or LAs.	Stakeholders and Regional Board	2 years after the submittal of information necessary to reevaluate the TMDL
15	Achievement of Final WLAs	POTW permittees and MS4 Copermittees	2 years after the effective date of the TMDL[2]
16	Achievement of Final LAs	Agricultural Dischargers	10 years after the effective date of the TMDL[2]

1 Interim WLAs and LAs are effective immediately upon TMDL adoption. WLAs will be placed in POTW NPDES permits as effluent limits. WLAs will be placed in stormwater NPDES permits as in-stream limits. LAs will be implemented using applicable regulatory mechanisms.

2 Effective date of this TMDL.

3 The Regional Board regulatory programs addressing all discharges in effect at the time an implementation task is due may contain requirements substantially similar to the requirements of an implementation task. If such a requirement is in place in another regulatory program including other TMDLs, the Executive Officer may determine that such other requirements satisfy the requirements of an implementation task of the TMDL and thereby coordinate this TMDL implementation plan with other regulatory programs.

7-17 Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:

The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on January 20, 2006.
The U.S. Environmental Protection Agency on March 14, 2006.

The effective date of this TMDL is: March 24, 2006.

The following table includes the elements of the TMDL:

Table 7-17.1. Calleguas Creek Watershed OC Pesticides, PCBs, and Siltation TMDL: Elements

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Problem Statement	Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) were identified on the 2002 303(d) list of water-quality limited segments as impaired due to elevated levels of organochlorine (OC) pesticides and/or polychlorinated biphenyls (PCBs) in water, sediment, and/or fish tissue. Additionally, Mugu Lagoon was listed as impaired for sedimentation/siltation. OC pesticides and PCBs can bioaccumulate in fish tissue and cause toxicity to aquatic life in estuarine and inland waters. Siltation may transport OC Pesticides and PCBs to surface waters and impair aquatic life and wildlife habitats.
Numeric Targets	The following tables provide the targets for water, fish tissue, and sediment for this TMDL. Water column targets were derived from the California Toxic Rule (CTR) water quality criteria for protection of aquatic life. Chronic criteria (Criteria Continuous Concentration, or CCC) were applied unless otherwise noted in the table below:

Water Quality Targets (ng/L)[1]

Constituent	Freshwater	Marine[2]
Aldrin	300.0	130.0
Chlordane	4.3	4.0
Dacthal	3,500,000.0	(a)[3]
4,4'-DDD[4]	(a)[3]	(a)[3]
4,4'-DDE[5]	(a)[3]	(a)[3]
4,4'-DDT[6]	1.0	1.0
Dieldrin	56.0	1.9
Endosulfan I	56.0	8.7
Endosulfan II	56.0	8.7
Endrin	36.0	2.3
HCH (alpha-BHC[7])	(a)[3]	(a)[3]
HCH (beta-BHC)	(a)[3]	(a)[3]
HCH (delta-BHC)	(a)[3]	(a)[3]
HCH (gamma BHC)	950.0	160.0
Heptachlor	3.8	3.6
Heptachlor Epoxide	3.8	3.6
PCBs	140.0[8]	30.0
Toxaphene	0.2	0.2

1 ng/L: nanogram per litter
2 Marine numeric targets applied to Mugu Lagoon
3 Numeric targets have not been established for these constituents
4 DDD: Dichlorodiphenyldichloroethane
5 DDE: Dichlorodiphenyldichloroethylene
6 DDT: Dichlorodiphenyltrichloroethane
7 BHC: Hexachlorocyclohexane
8 Applies to sum of all congener or isomer or homolog or Aroclor analyses

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Numeric Targets (continued)	Fish tissue targets are derived from CTR human health criteria for consumption of organisms.

Fish Tissue Targets (ng/Kg)

Constituent	
Aldrin	50.0
Chlordane	830.0
Dacthal	(a)[9]
4,4'-DDD	45,000.0
4,4'-DDE	32,000.0
4,4'-DDT	32,000.0
Dieldrin	650.0
Endosulfan I	65,000,000.0
Endosulfan II	65,000,000.0
Endrin	3,200,000.0
HCH (alpha-BHC)	1,700.00
HCH (beta-BHC)	6,000.0
HCH (delta-BHC)	(a)[9]
HCH (gamma BHC)	8,200.
Heptachlor	2,400.0
Heptachlor Epoxide	1,200.0
PCBs	5,300.0[10]
Toxaphene	9,800.0

Sediment targets were derived from sediment quality guidelines contained in National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT, Buchman, 1999).

Sediment Quality Targets (ng/dry Kg)

Constituent	Freshwater, TEL[11]	Marine[12], ERL[13]
Aldrin	(a)[9]	(a)[9]
Chlordane	4,500.0	500.0
Dacthal	(a)[9]	(a)[9]
4,4'-DDD	3,500.0	2,000.0
4,4'-DDE	1,400.0	2,200.0
4,4'-DDT	(a)[9]	1,000.0
Dieldrin	2,900.0	20.0
Endosulfan I	(a)[9]	(a)[9]
Endosulfan II	(a)[9]	(a)[9]
Endrin	2,700.0	(a)[9]
HCH (alpha-BHC)	(a)[9]	(a)[9]
HCH (beta-BHC)	(a)[9]	(a)[9]
HCH (delta-BHC)	(a)[9]	(a)[9]
HCH (gamma BHC)	940.0	(a)[9]
Heptachlor	(a)[9]	(a)[9]
Heptachlor Epoxide	600.0	(a)[9]
PCBs	34,000.0[10]	23,000.0
Toxaphene	(a)[9]	(a)[9]

9 Numeric targets have not been established for these constituents
10 Applies to sum of all congener or isomer or homolog or Aroclor analyses
11 TEL = Threshold Effects Level
12 Marine numeric targets applied to Mugu Lagoon
13 ERL = Effects Range-Low.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	Siltation Targets This TMDL includes two numeric targets for siltation reduction and maintenance of existing habitat in Mugu Lagoon which are listed below: • Siltation reduction Annual average reduction in the import of silt of 5,200 tons/year, which will be measured at the US Naval Base total suspended sediment gauge at the entrance to Mugu Lagoon. • Maintenance of existing habitat in Mugu Lagoon Preservation of the existing 1400 acres of aquatic habitat in Mugu Lagoon.
Source Analysis	Monitoring data from major NPDES discharges and land use runoff were analyzed to estimate the magnitude of OC pesticides and PCBs loads to Calleguas Creek, its tributaries and Mugu Lagoon. The largest source of OC pesticides in the listed waters is agricultural runoff. Most PCB residues are due to past use of PCBs as coolants and lubricants in transformers, capacitors, and other electrical equipment. Atmospheric deposition is also a potential source of PCBs. Urban runoff and POTWs are minor sources of OC pesticides and PCBs. Data analysis suggests that groundwater, atmospheric deposition, and imported water are not significant sources of OC pesticides, PCBs, or sediment. Further evaluation of these sources is set forth in the Implementation Plan.
Linkage Analysis	The linkage analysis is based on a conceptual model for the fate, transformation, and uptake of OC pesticides and PCBs and a mass-balance model that connects the sources of OC pesticides and PCBs to their fate and transport in Calleguas Creek, its tributaries, and Mugu Lagoon. The linkage analysis indicates: 1) OC pesticides and PCBs concentrations in tissue are proportional to OC pesticides and PCBs concentrations in sediments; 2) OC pesticides and PCBs concentrations in water are a function of OC pesticides and PCBs concentrations in sediment; and 3) OC pesticides and PCBs concentrations in sediment are a function of OC pesticides and PCBs loading and sediment transport. Because sediments store, convey and serve as a source of OC pesticides and PCBs, a reduction of OC pesticides and PCBs concentrations in sediment will result in a reduction of OC pesticides and PCBs concentration in the water column and fish tissue. In this linkage analysis, DDE is used as a representative constituent, because DDE is consistently detected in monitoring and exceeds numeric targets in water, sediment, and tissue samples. Also, other OC Pesticides and PCBs possess similar physical and chemical properties to DDE.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Wasteload Allocations	**1. Interim and Final WLAs* for Pollutants in Effluent for POTWs.**

The interim wasteload allocations for POTWs will be re-considered by the Regional Board on a 5-year basis. This re-consideration will be based on sufficient data to calculate Interim Wasteload Allocations in accordance with SIP procedures.

a) Interim WLAs (ng/L)

Constituent	POTW				
	Hill Canyon	Simi Valley	Moorpark	Camarillo	Camrosa
	Daily	Daily	Daily	Daily	Daily
Chlordane	1.2	100.0	100.0	100.0	100.0
4,4-DDD	20.0	50.0	50.0	6.0	50.0
4,4- DDE	260.0	1.2	1.2	188.0	50.0
4,4-DDT	10.0	10.0	10.0	10.0	10.0
Dieldrin	10.0	10.0	10.0	10.0	10.0
PCBs	500.0	500.0	500.0	31.0	500.0
Toxaphene	500.0	500.0	500.0	500.0	500.0

* WLAs shall be applied to POTWs'effluent

b) Final WLAs (ng/L)

Constituent	POTW									
	Hill Canyon		Simi Valley		Moorpark		Camarillo		Camrosa	
	Daily	Monthly	Daily	Monthly	Daily	Monthly	Daily	Monthly	Daily	Monthly
Chlordane	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
4,4-DDD	1.7	0.84	1.7	0.84	1.7	0.84	1.7	0.84	1.7	0.84
4,4- DDE	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
4,4-DDT	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
Dieldrin	0.28	0.14	0.28	0.14	0.28	0.14	0.28	0.14	0.28	0.14
PCBs	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17
Toxaphene	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16

The final WLAs will be included in NPDES permits in accordance with schedule in the implementation plan. The Regional Board may revise final WLAs prior to the dates they are placed into permits and/or prior to the dates of final WLA achievement based on special studies and monitoring of this TMDL.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Wasteload Allocations (continued)	

2. Interim and Final WLAs for Pollutants in Sediment for Stormwater Permittees

a) Interim WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	25.0	17.0	48.0	3.3	3.3	3.4
4,4-DDD	69.0	66.0	400.0	290.0	14.0	5.3
4,4- DDE	300.0	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	39.0	110.0	690.0	670.0	25.0	2.0
Dieldrin	19.0	3.0	5.7	1.1	1.1	3.0
PCBs	180.0	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	22,900.0	260.0	790.0	230.0	230.0	260.0

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

b) Final WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

3. Final WLAs for Pollutants in Water Column for Minor Point Sources

WLAs for pollutants in water column are allocated below to minor point sources enrolled under NPDES permits or WDRs, which discharge to Calleguas Creek.

Constituent	Daily Maximum (ng/L)	Monthly Average (ng/L)
Chlordane	1.2	0.59
4,4-DDD	1.7	0.84
4,4- DDE	1.2	0.59
4,4-DDT	1.2	0.59
Dieldrin	0.28	0.14
PCBs	0.34	0.17
Toxaphene	0.33	0.16

4. Siltation WLA for MS4

MS4 dischargers will receive an allocation of 2,496-tons/yr. reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Load Allocations	Compliance with sediment based LAs listed below is measured as an in-stream annual average at the base of each subwatershed.

1. Interim and Final Load Allocations

a) Interim Sediment LAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	25.0	17.0	48.0	3.3	3.3	3.4
4,4-DDD	69.0	66.0	400.0	290.0	14.0	5.3
4,4- DDE	300.0	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	39.0	110.0	690.0	670.0	25.0	2.0
Dieldrin	19.0	3.0	5.7	1.1	1.1	3.0
PCBs	180.0	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	22900.0	260.0	790.0	230.0	230.0	260.0

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

b) Final Sediment LAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

2. Siltation LAs

Agricultural dischargers will receive an allocation of 2,704 tons/yr. Reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Margin of Safety	This TMDL relies on an implicit margin of safety, by incorporating conservative assumptions throughout its development, including: ▪ Basing percent reductions on the historical data set of water and fish tissue concentrations, which does not reflect the effects of attenuation the over the past ten years. ▪ Determining the percent reduction in sediment, by basing it on the greater percent reduction of either water or fish tissue concentrations based on available data.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Margin of Safety (continued)	▪ Reducing the allowable concentration for upstream subwatersheds, to ensure protection of those subwatersheds downstream from upstream inputs. ▪ Choosing Threshold Effects Levels (TELs) and Effects Range Lows (ERLs) as numeric targets for sediment, which are the most protective applicable sediment guidelines. ▪ Selecting the more stringent of the allowable concentration (as calculated by percent reduction methodology) or the numeric target for sediment (TEL or ERL), when available, as the WLA and LA for all reaches with 303(d) listings for sediment.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Since most of the listed OCs and PCBs in the CCW are banned, this growth is not expected to increase current loads. Urban application of those OC pesticides which are still legal (dacthal and endosulfan) may increase, but overall use may decrease because urban expansion tends to reduce total acreage of agricultural land. Population growth may result in greater OC loading to POTW influent from washing food products containing OC residues. This loading may be proportional to the increase in population, if per capita domestic water use and pesticide load per household remain constant. Increased flow from POTWs should not result in impairment of the CCW as long as effluent concentration standards are met for each POTW. As urban development occurs, construction activities may have a range of effects on OC loading to the CCW. Exposure of previously vegetated or deeply buried soil might lead to increased rates of transportation and volatilization. Conversely, urbanization of open space and/or agriculture areas may cover OC pesticides bound to sediments. Future growth in the CCW may result in increased groundwater concentrations of currently used OC pesticides. This is a potential concern for dacthal, which is still used and has been found in groundwater (although current levels of dacthal are significantly lower than all available targets). The effects of future growth upon PCB loads are unknown, but not likely to prove significant, since atmospheric deposition and accidental spills are the primary loading pathways. Any increase in OCs due to population growth may be offset by decreased inputs from banned OCs, as their presence attenuates due to fate and transport processes.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Critical Conditions	The linkage analysis found correlation between concentrations of OC pesticides and PCBs in water and total suspended solids (TSS), and a potential correlation between OC pesticides and PCBs concentrations in water and seasonality (wet vs. dry season). A similar correlation between sediment loading and wet weather is also noted. OC pesticides and PCB pollutants are of potential concern in the Calleguas Creek Watershed due to possible long-term loading and food chain bioaccumulation effects. There is no evidence of short-term effects. However, pollutant loads and transport within the watershed may vary under different flow and runoff conditions. Therefore the TMDLs consider seasonal variations in loads and flows but are established in a manner which accounts for the longer time horizon in which ecological effects may occur. Wet weather events, which may occur at any time of the year, produce extensive sediment redistribution and transport downstream. This would be considered the critical condition for loading. However, the effects of organochlorine compounds are manifested over long time periods in response to bioaccumulation in the food chain. Therefore, short-term loading variations (within the time scale of wet and dry seasons each year) are not likely to cause significant variations in beneficial use effects. Therefore, although seasonal variations in loads and flows were considered, the TMDL was established in a manner which accounts for the longer time horizon in which ecological effects may occur
Implementation Plan	The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided in Table 7-17.2. The Regional Board may revise these WLAs based on additional information developed through Special Studies and/or Monitoring of this TMDL. WLAs established for the five major POTWs in this TMDL will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits for POTWs. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The implementation plan for POTWs focuses on implementation of source control activities. Consideration of annual averaging of compliance data will be evaluated at the time of permit renewal based on available information, Regional Board policies, and US EPA approval.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Implementation Plan (continued)	In accordance with current practice, a group concentration-based WLA has been developed for MS4s, including the Caltrans MS4. The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. Other NPDES-regulated stormwater permittees will be assigned a concentration-based WLA consistent with the interim and final WLAs set forth above. Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured at the downstream points of each subwatershed and are expected to be achieved through the implementation of BMPs as outlined in the implementation plan. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. If BMPs are to be used, the Regional Board will need to detail its findings and conclusions supporting the use of BMPs in the NPDES permit fact sheets. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluated the TMDL to incorporate such guidance. LAs will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP). The LARWQCB is developing a Conditional Waiver for Irrigated Lands, which includes monitoring at sites subject to approval by the Executive Officer of the Regional Board. Should adoption of the Conditional Waiver be delayed, monitoring will be required as part of this TMDL. Studies are currently being conducted to assess the effectiveness of BMPs for reduction of pollutants from agricultural operations. Results will be used to develop Agricultural Water Quality Management Plans, including the implementation of agricultural BMPs. Additionally, an agricultural education program will be developed to inform growers of the recommended BMPs and the Management Plan. As shown in Table 7-17.2, implementation actions will be taken by agricultural dischargers located in the CCW. The implementation of agricultural BMPs will be based on a comprehensive approach to address pollutant loads discharged from agricultural operations. The Regional Board may revise these LAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL. A number of provisions in this TMDL might provide information that could result in revisions to the TMDL. Additionally, the development of sediment quality criteria and other water quality criteria revisions may require the reevaluation of this TMDL. Finally, the use of OC pesticides in other countries which may be present in imported food products, compounded with the persistence of OC pesticides and PCBs in the environment, indicate that efforts to control sources and transport of OCs to receiving waters may not result in attainment of targets and allocations due to activities that are outside the control of local agencies and agriculture. For these reasons, the Implementation Plan includes this provision for reevaluating the TMDL to consider revised water quality objectives and the results of implementation studies, if appropriate.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Implementation Plan (continued)	The siltation portion of the TMDL includes wasteload and load allocations set as an annual mass reduction from a baseline value of sediment and silt deposited in Mugu Lagoon. The baseline value of sediment and silt conveyed to Mugu Lagoon is to be determined by a TMDL Special Study and established by the Regional Board through an amendment to the TMDL. The Special Study is eight years in duration to ensure that the full range of current conditions that affect loading of sediment and siltation to Mugu Lagoon are considered. If appropriate, the Special Study may also result in a revision to the mass load reduction. The Special Study will be overseen by a Science Advisory Panel consisting of local, regional, and/or national experts in estuarine habitat biology, hydrology, and engineering. At the conclusion of the special study, the Regional Board will reconsider the TMDL to establish sustainable wasteload and load allocations recommended by the Special Study to support aquatic life and wetland habitat beneficial uses. In implementing this TMDL, staff recognize that dischargers may be implementing management measures and management practices to reduce sediment and Siltation loads through permit and waiver programs during the special studies. Further, since the effective date of the Consent Decree, reaches of Calleguas Creek have been listed due to sediment, and another TMDL may be initiated during the Special Study of this TMDL. Staff's intent is to coordinate the requirements of this TMDL with other programs that reduce sedimentation and siltation. The Special Study can consider sediment and silt load reductions through existing permits and the forthcoming conditional waiver for irrigated lands. Load and wasteload allocations become effective after the Regional Board actions based on the Special Study, nine years after the effective date of the TMDL.

Table 7-17.2 Calleguas Creek Watershed OC Pesticides, PCBs, and Siltation TMDL: Implementation Schedule

Item	Implementation Action [1]	Responsible Party	Completion Date
1	Interim organochlorine pesticide and polychlorinated biphenyls wasteload allocations apply.	NPDES Permittees	Effective date of the amendment
2	Interim organochlorine pesticide and polychlorinated biphenyls load allocations apply.	Agricultural Dischargers	Effective date of the amendment
3	Finalize and submit workplan for organochlorine pesticide and polychlorinated biphenyls TMDL monitoring, or finalize and submit a workplan for an Integrated Calleguas Creek Watershed organochlorine pesticide and polychlorinated biphenyls Monitoring Program for approval by the Executive Officer. The monitoring workplan will include, but not be limited to, appropriate water, biota, and sediment loading and monitoring to verify attainment of targets and protection of beneficial uses.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after effective date of the amendment
4	Initiate Calleguas Creek Watershed organochlorine pesticide, polychlorinated biphenyls, and siltation Monitoring Program developed under the Task 3 workplan approved by the Executive Officer.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after Executive Officer approval of Monitoring Program (Task 3) workplan
5	Submit a workplan for approval by the Executive Officer to identify urban, industrial and domestic sources of organochlorine pesticides and polychlorinated biphenyls and control methods and to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls .	POTW Permittees, MS4 Permittees, US Navy	1 year after effective date of the amendment
6	Submit a workplan for approval by the Executive Officer to identify agricultural sources and methods to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	1 year after effective date of the amendment
7	Special Study #1 – Submit a workplan and convene a Science Advisory Panel to quantify sedimentation in Mugu Lagoon and sediment transport throughout the Calleguas Creek Watershed. Evaluate management methods to control siltation and contaminated sediment transport to Calleguas Creek, identify appropriate BMPs to reduce sediment loadings, evaluate numeric targets and wasteload and load allocations for siltation/sedimentation to support habitat related beneficial uses in Mugu Lagoon, evaluate the effect of sediment on habitat preservation in Mugu Lagoon, and evaluate appropriate habitat baseline, effectiveness of sediment and siltation load allocations on a subwatershed basis, and methods to restore habitat for approval by the Executive Officer. Additionally, this special study will evaluate the concentration of organochlorine pesticides and polychlorinated biphenyls in sediments from various sources/land use types. [2]	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	1 year after effective date of the amendment

Item	Implementation Action [1]	Responsible Party	Completion Date
8	Special study #2 – Conduct a study to identify land areas with high organochlorine pesticide and polychlorinated biphenyls concentrations, and submit a workplan including milestones and an implementation period that is as short as possible, but not to exceed 6 years, for removal to mitigate the effects of flood control practices on organochlorine pesticides, polychlorinated biphenyls, and sediment loadings to Calleguas Creek waterbodies from any high concentration areas identified. Milestones shall include proposed percentages of reductions achieved by removal. Such practices include but are not limited to management of agricultural runoff, sediment reduction practices and structures, streambank stabilization, and other projects related to stormwater conveyance and flood control improvements in the Calleguas Creek watershed. [2]	Agricultural Dischargers, MS4 Permittees, US Navy	1 years after effective date of the amendment
9	Develop an Agricultural Water Quality Management Plan in consideration of the forthcoming Conditional Waiver for Irrigated Lands, or, if the Conditional Waiver for Irrigated Lands is not adopted in a timely manner, develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP. Implement an educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	3 years after effective date of the amendment
10	Based on results of the Task 5 workplan approved by Executive Officer, implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	POTW Permittees, MS4 Permittees, US Navy	5 years after effective of the amendment
11	Based on results of the Task 6 workplan approved by Executive Officer implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	5 years after effective of the amendment
12	Re-evaluation of POTW Interim wasteload allocations for organochlorine pesticides and polychlorinated biphenyls based on State Implementation Plan procedures.	Regional Board	5 years, 10 years and 15 years after the effective date of the amendment
13	Special Study #1 – Submit results of Special Study #1, including recommendations for refining the siltation load and wasteload allocations.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	8 years after effective date of the amendment
14	Re-evaluation of siltation and sediment load and wasteload allocations based on Special Study #1.	Regional Board	9 years after effective date of the amendment
15	Effective date of siltation load allocation and wasteload allocation.	Agricultural dischargers, US Navy, MS4 permittees	9 years after effective date of the amendment

Item	Implementation Action [1]	Responsible Party	Completion Date
16	Special Study #3 – Evaluate natural attenuation rates and evaluate methods to accelerate organochlorine pesticide and polychlorinated biphenyl attenuation and examine the attainability of wasteload and load allocations in the Calleguas Creek Watershed. [2, 3]	POTW Permittees , Agricultural Dischargers, MS4 Permittees, and US Navy	10 years after effective date of the amendment
17	Special Study #4 (optional) – Examine of the food web and bioconcentration relationships throughout the watershed to evaluate assumptions contained in the Linkage Analysis and ensure that protection of beneficial uses is achieved. [2]	Interested Parties	12 years after effective date of the amendment
18	Based on the results of Implementation Items 1-17, if sediment guidelines are promulgated or water quality criteria are revised, and/or if fish tissue and water column targets are achieved without attainment of WLAs or LAs, the Regional Board will consider revisions to the TMDL targets, allocations, and schedule for expiration of Interim Wasteload and Interim Load Allocations.[3]	Regional Board	10 years after effective date of the amendment
19	Achieve Final WLAs and LAs	Agricultural Dischargers, POTW Permittees, and MS4 Permittees	20 years after effective date of the amendment

1 The Regional Board regulatory programs addressing all discharges in effect at the time an implementation task is due may contain requirements substantially similar to the requirements of an implementation task. If such a requirement is in place in another regulatory program including other TMDLs, the Executive Officer may determine that such other requirements satisfy the requirements of an implementation task of this TMDL and thereby coordinate this TMDL implementation plan with other regulatory programs.

2 Special studies included in the Implementation Plan are based on the TMDL Technical Documents.

3 After completion of this special study, the TMDL will be reopened in order to enable the Regional Board to evaluate whether a shorter time period is appropriate for the achievement of the final WLAs and LAs.

7-18 Marina del Rey Harbor Toxic Pollutants TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 6, 2005.

This TMDL was approved by:
The State Water Resources Control Board on January 13, 2006.
The Office of Administrative Law on March 13, 2006.
The U.S. Environmental Protection Agency on March 16, 2006.

The effective date of this TMDL is: March 22, 2006.

The following tables include the elements of this TMDL.

Table 7-18.1. Marina del Rey Harbor Toxic Pollutants TMDL: Elements

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>The back basins of Marina del Rey Harbor are on the Clean Water Act Section 303(d) list of impaired waterbodies for chlordane, copper, lead, zinc, PCBs, DDT, dieldrin, sediment toxicity and a fish consumption advisory. Review of available data during the development of this TMDL indicated that dieldrin and DDT are no longer causes of impairment. The following designated beneficial uses are impaired by chlordane, copper, lead, zinc, PCBs, and toxicity: water contact recreation (REC1); marine habitat (MAR); wildlife habitat (WILD); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).</td></tr>
<tr><td>Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations)</td><td>Numeric targets for the harbor sediments are based on the sediment quality guidelines compiled by the National Oceanic and Atmospheric Administration, which are used in evaluating waterbodies within the Los Angeles Region for development of the 303(d) list. The Effects Range-Low (ERLs) guidelines are established as the numeric targets for sediments in Marina del Rey Harbor.

<table>
<tr><th colspan="3">Numeric Targets for Metals in Sediment (mg/kg)</th></tr>
<tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr>
<tr><td>34</td><td>46.7</td><td>150</td></tr>
</table>

<table>
<tr><th colspan="2">Numeric Targets for Organic Compounds in Sediment (µg/kg)</th></tr>
<tr><th>Chlordane</th><th>Total PCBs</th></tr>
<tr><td>0.5</td><td>22.7</td></tr>
</table>

In addition to the sediment numeric target, water column and fish tissue targets are set for the PCB impairment in fish tissue.</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations) (continued)	The California Toxics Rule (CTR) Criterion for the protection of human health from the consumption of aquatic organisms is selected as the final numeric target for total PCBs in the water column. However, given the inability of current analytical methods to detect concentrations at this low level, an interim numeric target will be applied. The CTR Chronic Criterion for the protection of aquatic life in saltwater is selected as the interim numeric target for the fish tissue impairment by PCBs. This numeric target will remain in effect until advances in technology allow for analysis of PCBs at lower detection limits. **Interim Target for total PCBs in the Water Column:** 0.03µg/L **Final Target for total PCBs in the Water Column:** 0.00017 µg/L The numeric Target for PCBs in fish tissue is the Threshold Tissue Residue Level that is derived from CTR human health criteria, which are adopted criteria for water designated to protect humans from consumption of contaminated fish or other aquatic organisms. **Numeric Target for total PCBs in Fish Tissue:** 5.3 µg/Kg
Source Analysis	Urban storm water has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban storm water (i.e., copper, lead, and zinc) are consistently associated with suspended solids. Because metals are typically associated with fine particles in storm water runoff, they have the potential to accumulate in marine sediments where they may pose a risk of toxicity. Similar to metals, the majority of organic constituents in storm water are associated with particulates. Passive leaching of copper-based anti-fouling paints is a potential source of copper loading to the sediment. However, there is insufficient information available to quantify the contribution of boat discharges to the sediment pollutant load. This TMDL requires a study designed to estimate copper partitioning between the water column and sediment in Marina del Rey harbor, in order to determine the impact of passive leaching on the marine sediment. Direct deposition of airborne particles to the water surface may be responsible for contributing copper, lead and zinc to the Marina del Rey back basins. The estimated contribution from this source is minor. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Marina del Rey Harbor. The loading of metals associated with indirect atmospheric deposition are accounted for in the storm water runoff.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Loading Capacity</td><td>
TMDLs are developed for copper, lead, zinc, chlordane, and PCBs within the sediments of Marina del Rey Harbor’s back basins.

The loading capacity for Marina del Rey Harbor is calculated by multiplying the numeric targets by the average annual total suspended solids (TSS) loading to the harbor sediment. The average annual TSS discharged to the back basins of the harbor is 64,166 kilograms per year (kg/yr). The TMDL is set equal to the loading capacity.

<u>Metals Loading Capacity (kilograms/year)</u>
<table><tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr><tr><td>2.18</td><td>3.0</td><td>9.6</td></tr></table>
<u>Organics Loading Capacity (grams/year)</u>
<table><tr><th>Chlordane</th><th>Total PCBs</th></tr><tr><td>0.03</td><td>1.46</td></tr></table>
</td></tr>
<tr><td>Load Allocations
(for nonpoint sources)</td><td>
Load allocations (LA) are developed for nonpoint sources in Marina del Rey Harbor, which includes direct atmospheric deposition. The load allocations are not assigned to a particular nonpoint source or group of nonpoint sources.

The mass-based load allocation for direct atmospheric deposition is equal to the percentage of the watershed covered by water (5.4%) multiplied by the total loading capacity.

<u>Metals Load Allocations for Direct Atmospheric Deposition (kg/yr)</u>
<table><tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr><tr><td>0.12</td><td>0.16</td><td>0.52</td></tr></table>
<u>Organics Load Allocations for Direct Atmospheric Deposition(g/yr)</u>
<table><tr><th>Chlordane</th><th>Total PCBs</th></tr><tr><td>0.002</td><td>0.079</td></tr></table>
</td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>
Waste load allocations (WLA) are assigned to point sources for the Marina del Rey watershed. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocations from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

<u>Metals Waste Load Allocations for Storm Water (kg/yr)</u>
<table><tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr><tr><td>2.06</td><td>2.83</td><td>9.11</td></tr></table>
<u>Organics Waste Load Allocations for Storm Water (g/yr)</u>
<table><tr><th>Chlordane</th><th>Total PCBs</th></tr><tr><td>0.03</td><td>1.38</td></tr></table>
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an estimate of the percentage of land area covered under each permit. **Metals Storm Water WLAs Apportioned between Permits (kg/yr)** | | Copper | Lead | Zinc | MS4 Permittees: Copper 2.01, Lead 2.75, Zinc 8.85 Caltrans: Copper 0.022, Lead 0.03, Zinc 0.096 General Construction: Copper 0.033, Lead 0.045, Zinc 0.144 General Industrial: Copper 0.004, Lead 0.006, Zinc 0.018

Metals Storm Water WLAs Apportioned between Permits (kg/yr)

	Copper	Lead	Zinc
MS4 Permittees	2.01	2.75	8.85
Caltrans	0.022	0.03	0.096
General Construction	0.033	0.045	0.144
General Industrial	0.004	0.006	0.018

Organics Storm Water WLAs Apportioned between Permits (g/yr)

	Chlordane	Total PCBs
MS4 Permittees	0.0295	1.34
Caltrans	0.0003	0.015
General Construction	0.0005	0.022
General Industrial	0.0001	0.003

Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.

Metals per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (g/yr/ac)

Copper	Lead	Zinc
2.3	3.1	10

Organics per acre WLAs for Individual General Construction or Industrial Storm Water Permittees (mg/yr/ac)

Chlordane	Total PCBs
0.03	1.5

Concentration-based waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Marina del Rey Harbor. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.

Metals Concentration-based Waste Load Allocations (mg/kg)

Copper	Lead	Zinc
34	46.7	150

Organic Concentration-based Waste Load Allocations (µg/kg)

Chlordane	Total PCBs
0.5	22.7

Element	Key Findings and Regulatory Provisions
Margin of Safety	An implicit margin of safety is applied through the use of the more protective sediment quality guideline values. The ERLs were selected over the higher ERMs as the numeric targets.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-18.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented through NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying applicable engineering practices authorized under federal regulations. The minor and existing general non-storm water NPDES permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations. **General Industrial Storm Water Permit:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations. Concentration-based permit limits may be set to achieve the mass-based waste load allocations. These concentration-based limits would be equal to the concentration-based waste load allocations assigned to the other NPDES permits. It is expected that permit writers will translate the waste load allocations into BMPs, based on BMP performance data. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. The general industrial storm water permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General Construction Storm Water Permit:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed specific general construction storm water permit developed by the Regional Board. Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with waste load allocations if they implement these Regional Board approved BMPs. All general construction permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with waste load allocations. **MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, and Culver City are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Marina del Rey Harbor watershed is the County of Los Angeles. Each municipality and permittee will be required to meet the waste load allocations at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the numeric waste load allocations. We expect that reductions to be achieved by each BMP will be documented and that sufficient monitoring will be put in place to verify that the desired reductions are achieved. The permits should also provide a mechanism to adjust the required BMPs as necessary to ensure their adequate performance.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 10 years. However, the Regional Board may extend the implementation period up to 15 years if an integrated water resources approach is employed. The waste load allocations and load allocations have been developed to achieve the numeric targets in the back basins of Marina del Rey Harbor by the end of the compliance period. However, the Regional Board is aware of toxic pollutants bound up in sediment. To the extent that the Regional Board or another responsible jurisdiction or agency determines that toxic pollutants bound in sediments are still preventing the attainment of numeric targets, the Regional Board will issue appropriate investigatory orders or cleanup and abatement orders to achieve attainment of the numeric targets.
Seasonal Variations and Critical Conditions	There is a high degree of inter- and intra-annual variability in total suspended solids discharged to Marina del Rey Harbor. This is a function of the storms, which are highly variable between years. The TMDL is based on a TSS load derived from long-term average rainfall over a 52-year period from 1948 to 2000. This time period contains a wide range of storm conditions and drain discharges to Marina del Rey Harbor. Use of the average condition for the TMDL is appropriate because issues of sediment effects on benthic communities and potential for bioaccumulation to higher trophic levels occurs over long time periods.
Monitoring	Effective monitoring will be required to assess the condition of Marina del Rey Harbor and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutants loading from the Marina del Rey Watershed. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies that shall be developed in a coordinated manner. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient Component** A monitoring program is necessary to assess water quality throughout Marina del Rey Harbor and to assess fish tissue and sediment quality in the harbor's back basins. Data on background water quality for copper will help refine the numeric targets and waste load allocations and assist in the effective placement of BMPs. In addition, fish tissue data is required in Marina del Rey's back basins to confirm continued impairment.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Water quality samples shall be collected monthly and analyzed for chlordane and total PCBs at detection limits that are at or below the minimum levels until the TMDL is reconsidered in the sixth year. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. Special emphasis should be placed on achieving detection limits that will allow evaluation relative to the CTR standards. If these can not be achieved with conventional techniques, then a special study should be proposed to evaluate concentrations of organics. Water quality samples shall also be collected monthly and analyzed for copper, lead, and zinc until the TMDL is reconsidered in the sixth year. For metals water column analysis, methods that allow for (1) the removal of salt matrix to reduce interference and avoid inaccurate results prior to the analysis; and (2) the use of trace metal clean sampling techniques, should be applied. Examples of such methods include EPA Method 1669 for sample collection and handling, and EPA Method 1640 for sample preparation and analysis. Storm water monitoring shall be conducted for metals (copper, lead. and zinc) and organics (chlordane and total PCBs) to provide assessment of water quality during wet-weather conditions and loading estimates from the watershed to the harbor. Special emphasis should be placed on achieving lower detection limits for organochlorine compounds. The MS4 and Caltrans storm water permittees are jointly responsible for conducting bioaccumulation testing of fish and mussel tissue within the Harbor. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to confirm the 303(d) listing or de-listing, as applicable. Representative sediment sampling shall be conducted quarterly within the back basins of the harbor for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. Sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Initial sediment toxicity monitoring should be conducted quarterly in the first year of the TMDL to define the baseline and semi-annually, thereafter, to evaluate effectiveness of the BMPs until the TMDL is reconsidered in the sixth year. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the initial year of quarterly testing and the results compared. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28 day testing. **Effectiveness Component** The water quality samples collected during wet weather, defined as rainfall of 0.1 inch or more plus the 3 days following the rain event, shall be analyzed for total dissolved solids, settleable solids and total suspended solids if not already part of the sampling program. Sampling shall be designed to collect sufficient volumes of settable and suspended solids to allow for analysis of copper, lead, zinc, chlordane, total PCBs, and total organic carbon in the sediment. Monthly representative sediment sampling shall be conducted at existing monitoring locations throughout the harbor, and analyzed for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. The, sediment samples shall also be analyzed for total organic carbon and grain size. Sediment toxicity testing shall be conducted semi-annually, and shall include testing of multiple species (a minimum of three) for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day or10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Toxicity shall be indicated by an amphipod survival rate of 70% or less in a single test, in conjunction with a statistically significant decrease in amphipod survival relative to control organisms (significance determined by T-test, a=0.05). Accelerated monitoring maybe conducted to confirm toxicity at stations identified as toxic. Accelerated monitoring shall consist of six additional tests, approximately every two weeks, over a 12-week period. If the results of any two of the six accelerated tests are less than 90% survival, then the MS4 and Caltrans permittees shall conduct a Toxicity Identification Evaluation (TIE). Alternatively, responsible parties have the option of foregoing accelerated toxicity testing and conducting a TIE directly following an indication of toxicity. The TIE shall include reasonable steps to identify the sources of toxicity and steps to reduce the toxicity. The Phase I TIE shall include the following treatments and corresponding blanks: baseline toxicity; particle removal by centrifugation; solid phase extraction of the centrifuged sample using C8, C18, or another media; complexation of metals using ethylenediaminetetraacetic acid (EDTA) addition to the raw sample; neutralization of oxidants/metals using sodium thiosulfate addition to the raw sample; and inhibition of organophosphate (OP) pesticide activation using piperonyl butoxide addition to the raw sample (crustacean toxicity tests only). Bioaccumulation monitoring of fish and mussel tissue within the Harbor shall be conducted annually. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to assess the effectiveness of the TMDL. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general industrial permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in contaminate loads to the MS4 system.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	**Special Studies** Special studies are necessary to refine source assessments, to provide better estimates of loading capacity, and to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies. Studies required for this TMDL include: • Evaluate partitioning coefficients between water column and sediment to assess the contribution of water column discharges to sediment concentrations in the harbor, and • Evaluate the use of low detection level techniques to determine water quality concentrations for those contaminants where standard detection limits cannot be used to assess compliance for CTR standards or are not sufficient for estimating source loadings from tributaries and storm water. Studies recommended for this TMDL include: • Develop and implement a monitoring program to collect the data necessary to apply a multiple lines of evidence approach; • Refine the relationship between pollutants and suspended solids aimed at better understanding of the delivery of pollutants to the watershed, and • Evaluate the effectiveness of BMPs to address pollutants and/or sediments.

Table 7-18.2. Marina del Rey Harbor Toxic Pollutants TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations for sediment into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal or re-opener.
On-going	The Executive Officer shall promptly issue appropriate investigatory and clean up and abatement orders to address any toxicity hotspots within sediments identified as a result of data submitted pursuant to this TMDL, any U.S. Army Corps of Engineer dredging activity, or any other investigation.
Within 6 months after the effective date of the State Board adopted sediment quality objectives and implementation policy	The Regional Board will re-assess the numeric targets and waste load allocations for consistency with the State Board adopted sediment quality objectives.
5 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board result of any special studies.
6 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
7 years after effective date of the TMDL	The non-storm water NPDES permits shall achieve the concentration-based waste load allocations for sediment per provisions allowed for in NPDES permits.
GENERAL INDUSTRIAL STORM WATER PERMIT	
7 years after effective date of the TMDL	The general industrial storm water permits shall achieve the mass-based waste load allocations for sediment per provisions allowed for in NPDES permits. Permits shall allow an iterative BMP process including BMP effectiveness monitoring to achieve compliance with permit requirements.
GENERAL CONSTRUCTION STORM WATER PERMIT	
7 years from the effective date of the TMDL	The construction industry will submit the results of the BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
8 years from the effective date of the TMDL	The Regional Board will consider results of the BMP effectiveness studies and consider approval of BMPs no later than eight years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.

Date	Action
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months. The draft monitoring report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
5 years after effective date of TMDL (Draft Report) 5 ½ years after effective date of TMDL (Final Report)	The MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining how they will achieve the waste load allocations for sediment to Marina del Rey Harbor. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan. The draft report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
Schedule for MS4 and Caltrans Permittees if Pursuing a TMDL Specific Implementation Plan	
8 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
10 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
Schedule for MS4 and Caltrans Permittees if Pursuing an Integrated Resources Approach, per Regional Board Approval	
7 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 25% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
9 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
11 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
15 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.

7-19 Calleguas Creek Watershed Metals and Selenium TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 8, 2006.

This TMDL was approved by:

The State Water Resources Control Board on October 25, 2006.
The Office of Administrative Law on February 2, 2007.
The U.S. Environmental Protection Agency on March 26, 2007.

The effective date of this TMDL is March 26, 2007.

The elements of the TMDL are presented in Table 7-19.1 and the Implementation Plan in Table 7-19.2

Table 7-19.1. Calleguas Creek Watershed Metals and Selenium TMDL: Elements

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Problem Statement	Three of fourteen reaches in the Calleguas Creek Watershed (CCW) including Revolon Slough, Lower Calleguas Creek – Reach 2, and Mugu Lagoon are identified on the 2002 Clean Water Act Section 303(d) list of water-quality limited segments as impaired due to elevated levels of metals and selenium in water. The 303(d) listings, which were approved by the State Water Resources Control Board in February 2003, require the development of Total Maximum Daily Loads (TMDLs) to establish the maximum amount of pollutants a water body can receive without exceeding water quality standards. TMDLs for listed metals and selenium are presented herein in one document because, as a class of compounds, they possess similar physical and chemical properties that influence their persistence, fate, and transport in the environment.
Numeric Targets	This TMDL establishes four types of numeric targets: (1) California Toxics Rule (40 CFR Part 131) (CTR) criteria in dissolved fraction for copper, nickel, and zinc, and in total recoverable form for mercury and selenium; (2) fish tissue targets for mercury; (3) bird egg targets for mercury and selenium; and (4) sediment quality guidelines for copper, nickel, and zinc for 303(d) listed reaches. Attainment of sediment quality targets will be evaluated in combination with sediment toxicity data, if available.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Numeric Targets (continued)	**Copper Targets**

Subwatershed	Water Quality Target (ug dissolved Copper/L)		Sediment Target[3] (SQuiRTs, ERL) (ppb dry weight)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	3.1*WER[1]	4.8*WER[1]	34000
Calleguas Creek 2	3.1*WER[1]	4.8*WER[1]	34000
Calleguas Creek 3	25.9	26.3	NA[2]
Revolon/Beardsley	3.1*WER[1]	4.8*WER[1]	NA[2]
Conejo	27.9	41.6	NA[2]
Arroyo Simi/Las Posas	29.3	29.8	NA[2]

[1] The water quality targets for copper in the TMDL are expressed as the copper water quality criteria from the federal California Toxics Rule (CTR). Those criteria include a numerical threshold multiplied by a water-effect ratio (WER). The WER has a default value of 1.0 unless a site-specific WER is approved. To use a WER other than the default of 1.0, a study must be conducted consistent with USEPA's WER guidance and adopted by the Regional Board through the state's basin plan amendment process. A WER study for Mugu Lagoon (Reach 1), lower Calleguas Creek (Reach 2), Revolon Slough (Reach 4) and Beardsley Wash (Reach 5) has been submitted to the Regional Board. If the Regional Board approves site-specific WERs for copper in these waterbodies, the TMDL targets will be modified in accordance with all legal and regulatory requirements and implemented in accordance with the approved WERs using the equations set forth above.

[2] Sediment targets were not selected as alternative target for this reach as it is not on the 303(d) list.

[3] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999)

Mercury Targets

Media	Target
Fish Tissue (Human Health)	0.3 mg methylmercury/kg wet weight
Fish Tissue (Wildlife)	
*** Trophic Level (TL) 3[1] <50 mm**	0.03 mg methylmercury/kg wet weight
*** TL3 50-150 mm**	0.05 mg methylmercury/kg wet weight
*** TL3 150-350 mm**	0.1 mg methylmercury/kg wet weight
Bird Egg (Wildlife)	less than 0.5 mg total mercury/kg wet weight
Water Column	0.051 ug total mercury/L

[1] Trophic Level 3: Predators (e.g., minnows, sunfish) on trophic level 2 organism (e.g., copepods and water fleas)

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Numeric Targets (continued)	**Nickel Targets**

Subwatershed	Water Quality Target (ug dissolved Nickel/L)		Sediment Target[1] (SQuiRTs, ERL) (ppb dry weight)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	8.2	74	20900
Calleguas Creek 2	8.2	74	NA[2]
Calleguas Creek 3	149	856	NA[2]
Revolon/Beardsley	8.2	74	NA[2]
Conejo	160	1292	NA[2]
Arroyo Simi/Las Posas	168	958	NA[2]

[1] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999)

[2] Sediment targets were not selected as alternative target for this reach as it is not listed on the 303(d) list.

A study to support a site specific objective (SSO) for nickel has been submitted to the Regional Board and is currently under reviewed by the Regional Board and U.S. EPA staff. If a SSO for nickel is approved, the Regional Board will consider revision to the numeric targets for nickel based on the approved SSO.

Selenium Targets

Subwatershed	Water Quality Target (ug total selenium/L)		Bird Egg (ug/g)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	71	290	6
Calleguas Creek 2	5	290	6
Calleguas Creek 3	5	NA[1]	6
Revolon/Beardsley	5	290	6
Conejo	5	NA[1]	6
Arroyo Simi/Las Posas	5	NA[1]	6

[1] "NA" indicates that a target is not available for this constituent because criterion for fresh water is not defined in the CTR.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Numeric Targets (continued)	**Zinc Targets** <table><tr><th rowspan="2">Subwatershed</th><th colspan="2">Water Quality Target (ug dissolved Zinc/L)</th><th rowspan="2">Sediment Target[1] (SQuiRTs, ERL) (ppb dry weight)</th></tr><tr><th>Dry Weather CCC</th><th>Wet Weather CMC</th></tr><tr><td>**Mugu Lagoon**</td><td>81</td><td>90</td><td>150000</td></tr><tr><td>**Calleguas Creek 2**</td><td>81</td><td>90</td><td>NA[2]</td></tr><tr><td>**Calleguas Creek 3**</td><td>338</td><td>214</td><td>NA[2]</td></tr><tr><td>**Revolon/Beardsley**</td><td>81</td><td>90</td><td>NA[2]</td></tr><tr><td>**Conejo**</td><td>365</td><td>324</td><td>NA[2]</td></tr><tr><td>**Arroyo Simi/Las Posas**</td><td>382</td><td>240</td><td>NA[2]</td></tr></table>[1] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999) [2] Sediment targets were not selected as alternative target for this reach because it is not on the 303(d) list.
Source Analysis	Significant sources of metals and selenium include urban runoff, agricultural runoff, groundwater seepage, and POTW effluent. For mercury, open space was also a significant source. Sources were also analyzed as a function of wet and dry weather. Higher loads were delivered during wet weather for all constituents, due to the association between metals and particulate matter. The source analysis indicates naturally occurring mercury in soil may be a significant source, and that naturally occurring nickel, copper, zinc, and selenium in soil may be a contributing source, and that naturally occurring selenium in groundwater may be a significant source. The TMDL Implementation Plan includes special studies to further assess natural sources of metals in soil.
Linkage Analysis	Linkage between sources and instream pollutant concentrations was established through a dynamic water quality Hydrologic Simulation Program – FORTRAN (HSPF). The model output generally resulted in a conservative estimate of receiving water concentrations for metals. The model was used to calculate load reductions necessary to meet the numeric targets.The load reductions were used to calculate the load and waste load allocations.
Waste Load Allocations	In the case of copper, nickel, and selenium, waste load allocations (WLAs) were developed for both wet and dry-weather. The dry-weather WLAs apply to days when flows in the stream are less than the 86th percentile flow rate for each reach. The wet-weather WLAs apply to days when flows in the stream exceed the 86th percentile flow rate for each reach. Annual mass loads of mercury in suspended sediment were developed according to low, medium, and high annual flow categories.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**Publicly Owned Treatment Works (POTWs)**

Concentration-based and mass-based WLAs are established for copper, and nickel, in total recoverable forms, and are applied to POTWs during both wet and dry weather. Mass-based WLAs are developed for mercury for POTWs. Zinc allocations are not set because current information indicate that numeric targets for zinc are attained. The TMDL Implementation Plan includes a task to provide State Board data to support delisting of zinc. Waste load allocations for selenium are not set for POTWs because POTWs do not discharge to reaches listed for selenium. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data, respectively.

Interim and Final WLAs for Total Recoverable Copper in Water Column

POTW	Interim		Final[1]		
	Daily Maximum (ug/L)	Monthly Average (ug/L)	Daily Maximum (ug/L)[2]	Monthly Average (ug/L)[2]	lb/day
Hill Canyon WWTP	20.0	16.0	(a)	(a)	0.11*WER - 0.04
Simi Valley WQCP	(b)	(b)	31.0	30.5	(c)
Moorpark WTP	(b)	(b)	31.0	30.5	(d)
Camarillo WRP	57.0	20.0	(a)	(a)	0.12*WER - 0.04
Camrosa WRP	(b)	(b)	27.4	27.0	(d)

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading. In addition, effluent concentrations shall not exceed the performance standards of current treatment technologies.

[2] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.96

(a) Concentration-based final limits will be included in the permits in accordance with NPDES guidance and requirements, but are not calculated as part of the TMDL.

(b) Interim limits are not required because the discharger is meeting the final limits.

(c) Discharges from Simi Valley WQCP do not reach lower Calleguas Creek and Mugu lagoon during dry weather. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in Arroyo Simi/Las Posas or downstream reaches.

(d) Discharger does not contribute loading during dry weather. Concentration-based WLAs apply during wet weather when discharges occur. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in receiving water and/or downstream reaches.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**Interim and Final WLAs for Total Recoverable Nickel in Water Column**

POTW	Interim		Final		
	Daily Maximum (ug/L)	Monthly Average (ug/L)	Daily Maximum (ug/L)1	Monthly Average (ug/L)2	lb/day
Hill Canyon WWTP	8.3	6.4	(a)	(a)	0.3
Simi Valley WQCP	(b)	(b)	960.0	169.0	(c)
Moorpark WTP	(b)	(b)	960.0	169.0	(d)
Camarillo WRP	16.0	6.2	(a)	(a)	0.2
Camrosa WRP	(b)	(b)	858.0	149.0	(d)

[1] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.998.

[2] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.997.

(a) Concentration-based final limits will be included in the permits in accordance with NPDES guidance and requirements, but are not calculated as part of the TMDL.

(b) Interim limits are not required because the discharger is meeting the final limits.

(c) Discharges from Simi Valley WQCP do not reach lower Calleguas Creek and Mugu lagoon during dry weather. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in Arroyo Simi/Las Posas or downstream reaches.

(d) Discharger does not contribute loading during dry weather. Concentration-based WLAs apply during wet weather when discharges occur. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in receiving water and/or downstream reaches.

A study to support a SSO for nickel has been submitted to the Regional Board and is currently under reviewed by the Regional Board and U.S. EPA staff. If a SSO for nickel is approved, the Regional Board will consider revision to the final WLAs for nickel based on the approved SSO.

Interims and Final WLAs for Mercury in Suspended Sediment

POTW	Interim (lb/month)	Final (lb/month)
Hill Canyon WWTP	0.23	0.022
Simi Valley WQCP	0.18	0.031
Moorpark WTP	N/A	N/A
Camarillo WRP	0.03	0.015
Camrosa WRP	N/A	N/A

Waste load allocations for POTWs are based on the median monthly mercury effluent concentrations multiplied by the design flow where the total load in water is assumed equal to the suspended sediment load. Interim WLAs for mercury are based on the 90th percentile concentration observed in effluent discharge and multiplied by the design flow, and apply to all flow conditions.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**Permitted Stormwater Dischargers (PSDs)**

PSDs include mass-based WLAs established for copper, nickel, and selenium in total recoverable forms. Mass-based WLAs are developed for mercury in suspended sediment. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data.

Interim Limits and Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Interim limits and waste load allocations are applied to receiving water.

A. Interim Limits

Constituents	Calleguas and Conejo Creek			Revolon Slough		
	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
Copper	23	19	204	23	19	204
Nickel	15	13	(a)	15	13	(a)
Selenium	(b)	(b)	(b)	14 (c)	13 (c)	(a)

(a) The current loads do not exceed the TMDL under wet conditions; interim limits are not required.
(b) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.
(c) Attainment of interim limits will be evaluated in consideration of background loading data, if available.

B. Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Dry-Weather WLAs in Water Column

Flow Range	Calleguas and Conejo Creek			Revolon Slough		
	Low Flow	Average Flow	Elevated Flow	Low Flow	Average Flow	Elevated Flow
Copper1 (lbs/day)	0.04*WER - 0.02	0.12*WER - 0.02	0.18*WER - 0.03	0.03*WER - 0.01	0.06*WER - 0.03	0.13*WER - 0.02
Nickel (lbs/day)	0.100	0.120	0.440	0.050	0.069	0.116
Selenium (lbs/day)	(a)	(a)	(a)	0.004	0.003	0.004

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading.
(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**Wet-Weather WLAs in Water Column**

Constituent	Calleguas Creek	Revolon Slough
Copper[1] (lbs/day)	(0.00054*Q^2*0.032*Q - 0.17)*WER - 0.06	(0.0002*Q2+0.0005*Q)*WER
Nickel[2] (lbs/day)	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
Selenium[2] (lbs/day)	(a)	0.027*Q^2+0.47*Q

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading.

[2] Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table

(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.

Q: Daily storm volume.

Interim Limits and Final WLAs for Mercury in Suspended Sediment

Final WLAs are set at 80% reduction of HSPF load estimates. Interim limits for mercury in suspended sediment are set equal to the highest annual load within each flow category, based on HSPF output for the years 1993-2003.

Flow Range	Calleguas Creek		Revolon Slough	
	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)
0-15,000 MGY	3.3	0.4	1.7	0.1
15,000-25,000 MGY	10.5	1.6	4	0.7
Above 25,000 MGY	64.6	9.3	10.2	1.8

MGY: million gallons per year.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL

Waste Load Allocations (continued)

<u>Final WLAs for Other NPDES Dischargers</u>

Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Reach	Copper[1]		Nickel		Selenium	
	Dry Monthly Everage (ug/L)[2]	Wet Daily Maximum (ug/L)[2]	Dry Monthly Average (ug/L)[3]	Wet Daily Maximum (ug/L)[3]	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
1	3.7*WER	5.8*WER	8.2	74	(b)	(b)
2	3.7*WER	5.8*WER	8.2	74	(b)	(b)
3	27.0	27.4	149	859	(b)	(b)
4	3.7*WER	5.8*WER	8.3	75	5	290
5	3.7*WER	5.8*WER	8.3	75	5	290
6	(a)	31.0	(a)	958	(b)	(b)
7	(a)	31.0	(a)	958	(b)	(b)
8	(a)	31.0	(a)	958	(b)	(b)
9	29.1	43.3	160	1296	(b)	(b)
10	29.1	43.3	160	1296	(b)	(b)
11	29.1	43.3	160	1296	(b)	(b)
12	29.1	43.3	160	1296	(b)	(b)
13	29.1	43.3	160	1296	(b)	(b)

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading. In addition, effluent concentrations shall not exceed the performance standards of current treatment technologies

[2] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.96 for freshwater reaches and 0.83 for saltwater reaches.

[3] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.997 for freshwater reaches and 0.99 for saltwater reaches.

(a) Discharges from these reaches do not reach lower Calleguas Creek and Mugu Lagoon during dry weather. Allocations are not required for these reaches.

(b) Selenium waste load allocations have not been developed for this reach as it is not on the 303(d) list.

Final WLAs for Mercury

There is insufficient information to assign mass based WLAs to these sources. Therefore concentration-based waste loads allocations are set equal to 0.051 ug/L for other NPDES dischargers based on the CTR water column target for protection of human health from consumption organism only.

Load Allocation

Mass-based load allocations (LAs) for agriculture, and open space are developed for copper, nickel, and selenium in total recoverable forms. Open space represents background loads from ambient sources (i.e. natural soil concentrations, atmospheric deposition, and natural groundwater seepage) discharged from undeveloped open space, but not ambient sources that are discharged from developed land, such as agricultural and urban areas. LAs are developed for both wet and dry-weather. The dry-weather LAs apply to days when flows in the stream are less than 86th percentile flow rate for each reach. The wet-weather LAs apply to days when flows in the stream exceed 86th percentile flow rate for each reach. Annual mass loads of mercury in suspended sediment were developed according to low, medium, and high annual flow categories.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Load Allocation	**<u>Interim and Final Load Allocations for Total Recoverable Copper, Nickel, and Selenium</u>**

Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data. Interim limits and final load allocations are applied in receiving water at the compliance points.

A. Interim Limits

Constituents	Calleguas and Conejo Creek			Revolon Slough		
	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
Copper	24	19	1390	24	19	1390
Nickel	43	42	(a)	43	42	(a)
Selenium	(b)	(b)	(b)	6.7 (c)	6 (c)	(a)

(a) The current loads do not exceed the TMDL under wet conditions, interim limits are not required.
(b) Selenium allocations have not been developed for this reach as it is not on the 303(d) list. Implementation actions includes consideration of watershed-wide selenium impacts.
(c) Attainment of interim limits will be evaluated in consideration of background loading data, if available.

B. Final Load Allocation

Dry Weather LAs in Water Column

Constituent		Calleguas Creek			Revolon Slough		
		Low Flow	Average Flow	Elevated Flow	Low Flow	Average Flow	Elevated Flow
Copper[1] (lbs/day)	**Agriculture**	0.07*WER-0.03	0.12*WER-0.02	0.31*WER-0.05	0.07*WER-0.03	0.14*WER-0.07	0.35*WER-0.07
	Open Space	0.150	0.080	0.130	0.050	0.120	0.110
Nickel (lbs/day)	**Agriculture**	0.420	0.260	0.970	0.390	0.690	1.600
	Open Space	0.450	0.420	0.560	0.010	0.020	0.020
Selenium (lbs/day)	**Agriculture**	(a)	(a)	(a)	0.008	0.007	0.018
	Open Space	(a)	(a)	(a)	0.180	0.310	0.490

[1] If site-specific WERs are approved by the Regional Board, TMDL load allocations shall be implemented in accordance with the approved WERs using the equations set forth above.
(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list. Implementation actions include consideration of the watershed-wide selenium impacts.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL

Load Allocation (continued)

Wet Weather LAs in Water Column

Constituent		Calleguas Creek	Revolon Slough
Copper[1] (lbs/day)	Agriculture	(0.00017*Q^2*0.01*Q - 0.05)*WER - 0.02	(0.00123*Q^2+0.0034*Q)* WER
	Open Space	0.0000537*Q^2+0.00321*Q	0.0000432*Q^2+0.000765*Q
Nickel[2] (lbs/day)	Agriculture	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
	Open Space	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
Selenium[2] (lbs/day)	Agriculture	(a)	0.1*Q^2+1.8*Q
	Open Space	(a)	0.027*Q^2+0.47*Q

1 If site-specific WERs are approved by the Regional Board, TMDL load allocations shall be implemented in accordance with the approved WERs using the equations set forth above.
2 Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table
(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.
Q Daily storm volume

Interim and Final LAs for Mercury in Suspended Sediment

Final LAs are set at 80% reduction of HSPF load estimates. Interim limits for mercury in suspended sediment are set equal to the highest annual load within each flow category, based on HSPF output for the years 1993-2003

Flow Range	Calleguas Creek				Revolon Slough			
	Agriculture		Open Space		Agriculture		Open Space	
	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)
0-15,000 MGY[1]	3.9	0.5	5.5	0.7	2	.	2.9	0.2
15,000-25,000 MGY	12.6	1.9	17.6	2 .7	4.8	0.8	6.7	1.1
Above 25,000 MGY	77.5	11.2	108.4	17.9	12.2	2.2	17.1	2

MGY: million gallons per year.

Margin of Safety

A margin of safety (MOS) for the TMDL is designed to address any uncertainty in the analysis that could result in targets not being achieved in the water bodies. Both implicit and explicit MOS are included for this TMDL. The implicit MOS stems from 1) the use of conservative assumptions made during development of multiple numeric targets to ensure sufficient protection under all conditions, and 2) conservative methods employed in developing the TMDL. Background loads are assigned to the TMDL and assumed to remain constant throughout implementation of the TMDL. This results in higher required reductions for the other sources. Calculation of allocations is based on never exceeding numeric target concentrations more than once in three years as specified in the CTR. Calculations of current loads and loading capacity for Mugu Lagoon are based on the combined discharges from Calleguas Creek and Revolon Slough (without any dilution provided by tidal flushing), which over predicts actual concentrations in the Lagoon. A 15% explicit MOS is also included for copper and nickel to account for the uncertainty resulting from the calculation of the allowable load based on the median flow rate and translator of each flow category. The 15% explicit MOS is determined sufficient to address the elevated flow category, but still account for the more conservative nature of low and average category.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Future growth may initially increase loadings as construction activities expose bare soil and increase erosion-related discharges to receiving water. However, once development has been completed the presence of impermeable land surface and landscaped areas may reduce the amount of natural soils that are eroded and carried to the stream. For copper, future growth could increase loadings from urban areas and POTWs due to increased traffic (i.e., brake pad residues), architectural copper use and corrosion of copper pipes. Selenium loading may increase if increased irrigation raises the groundwater table and increases high selenium groundwater seepage to surface waters. However, if increased growth results in increased water demand and high selenium groundwater is pumped and treated to supply this demand, the selenium could decrease.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed for copper, nickel, and selenium by developing separate allocations for wet and dry weather. Critical conditions for copper, nickel, and selenium were developed using model results to calculate the maximum observed 4-day average dry weather concentration and the associated flow condition. Wet weather, as a whole, is defined as a critical condition. For mercury, there is no indication that mercury contamination in Mugu Lagoon is consistently exacerbated at any particular time of the year. Since the potential effects of mercury are related to bioaccumulation in the food chain over a long period time, any other short term variations in concentration which might occur are not likely to cause significant impacts upon beneficial uses. Therefore, seasonal variations do not affect critical conditions for the Calleguas Creek watershed mercury TMDL.
Special Studies and Monitoring Plan	Special Studies Several special studies are planned to improve understanding of key aspects related to achievement of WLAs and LAs for the Metals and Selenium TMDL ***1. Special Study #1 (Optional) – Evaluation and Initiation of Natural Sources Exclusion*** The TMDL technical report has identified ambient sources as the primary significant selenium and mercury loadings in the watershed and as potentially significant sources of copper and nickel. The portion of all ambient sources associated with open space runoff and natural groundwater seepage is accounted for in this TMDL as "background load." This special study will evaluate whether or not background loads for each constituent qualify for natural source exclusion.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	This study will also consider whether any portion of the ambient source contribution for agricultural or urban runoff loads qualify for natural source exclusions and/or provide a basis for site specific objectives. The presence of natural sources makes achievement of selenium and mercury targets during all conditions unlikely. For copper, achievement of the CTR targets or the WER based targets (if approved) in Revolon Slough may not be feasible due to the magnitude of background loads. Completion of site specific objectives and/or a use attainability analysis shall be required to review any potential change to water quality objectives for these constituents. This special study will be used to develop the necessary information to revise the water quality objectives for selenium and mercury and possibly for copper and nickel. ***2. Special Study #2 – Identification of selenium contaminated Groundwater Sources*** The purpose of this special study will be to identify groundwater with high concentrations of selenium that is either being discharged directly to the stream or used as irrigation water. The investigation will focus on areas where groundwater has a high probability of reaching the stream and identify practical actions to reduce the discharge of the groundwater to the stream. The analysis will include an assessment of the availability of alternative water supplies for irrigation water, the costs of the alternative water supplies and the costs of reducing groundwater discharges. ***3. Special Study #3– Investigation of Soil Concentrations and Identification of "Hot Spots"*** The purpose of this special study will be to identify terrestrial areas with high concentrations of metals and/or selenium, either due to anthropogenic sources or resulting from high natural concentrations in soils. Use of detailed soil maps for the watershed in combination with field survey and soil sampling may lead to identification of areas important for reducing overall loads reaching the stream. Identification of any areas with elevated soil concentrations of metals and/or selenium would create an opportunity for efficient and targeted implementation actions, such as remediation or erosion control. ***4. Special Study #4 (Optional) – Determination of Water Effect Ratio for Copper in Revolon Slough*** The purpose of this optional special study would be to calculate a WER for copper that is specific to Revolon Slough. A WER was not previously developed for Revolon Slough because it was not listed for copper. Subsequent monitoring demonstrated that the saltwater copper CTR criterion was exceeded in Revolon Slough. This Study would parallel the developed WER for Mugu Lagoon and Calleguas Creek. This is an optional special study to be conducted if desired by the stakeholders or determined necessary by the Executive Officer.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	***5. Special Study #5 (Optional) – Determination of Site-Specific Objectives for Mercury and Selenium*** Special Study #1 will evaluate whether a natural source exclusion is appropriate for background loads of mercury and selenium or any portion of the ambient source contributions to non-background loads in the Calleguas Creek watershed. This special study will develop any SSOs deemed necessary to account for the background conditions and/or site-specific impacts of mercury and selenium (and possibly for copper and nickel) on wildlife and humans in the watershed. This is an optional special study to be conducted if desired by the stakeholders or determined necessary for establishing a natural source exclusion. **<u>Monitoring Plan</u>** The Calleguas Creek Watershed TMDL Monitoring Plan (CCWTMP) is designed to monitor and evaluate the implementation of this TMDL and refine the understanding of metal and selenium loads. CCWTMP is intended to parallel efforts of the Calleguas Creek Watershed Nutrients TMDL, Toxicity TMDL, and OC Pesticide, PCBs, and Sediment TMDL monitoring programs. The proposed CCWTMP shall be made available for public review before approval by the Executive Officer. The goals of the CCWTMP include: (1) to determine compliance with copper, mercury, nickel, and selenium numeric targets at receiving water monitoring stations and at POTWs discharges; (2) to determine compliance with waste load and load allocations for copper, mercury, nickel, and selenium at receiving water monitoring stations and at POTWs discharges; (3) to monitor the effect of implementation action by PSDs, POTW, agricultural dischargers, and other NPDES permittees on in-stream water quality; and (4) to implement the CCWTMP in a manner consistent with other TMDL implementation plans and regulatory actions within the Calleguas Creek watershed. Monitoring conducted through the Conditional Waiver for Disharges from Irrigated Lands (Conditional Waiver Program) may meet part of the needs of the CCWTMP. To the extent monitoring required by the Metals and Selenium TMDL Implementation Plan parallels monitoring required by the Conditional Waiver Program, monitoring shall be coordinated with monitoring conducted by individuals and groups subject to the term and conditions of the Conditional Waiver Program.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	Monitoring will begin within one year of the effective date of the TMDL. For the first year, in-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC), copper, mercury, nickel, selenium, and zinc. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate. In-stream water column samples will be generally be collected at the base of Revolon Slough and Calleguas Creek, and in Mugu Lagoon (collection of flow-based samples will occur above the tidal prism). Additionally, sediment samples will be collected semi-annually in Mugu Lagoon and analyzed for sediment toxicity resulting from copper, mercury, nickel, selenium, and zinc. At such a time as numeric targets are consistently met at these points, an additional site or sites will be considered for monitoring to ensure numeric targets are met throughout the lower watershed. Additional samples will be collected concurrently at stations that are representative of agricultural and urban runoff as well as at POTWs in each of the subwatersheds and analyzed for GWQCs, copper, mercury, nickel, selenium, and zinc. The location of these stations will be determined before initiation of the CCWTMP. Environmentally relevant detection limits will be used for metals and selenium (i.e. detection limits lower than applicable target), if available at a commercial laboratory. Compliance sampling station locations:

Subwatershed	Station ID	Station Location	Constituent
Mugu Lagoon	01-11-BR	11th Street Bridge	Water Column: Cu, Ni, Hg, Se, Zn
			Bird Egg: Hg, Se
			Fish Tisue: Hg, Se
			Sediment: Cu, Ni, Hg, Se, Zn
Revolon Slough	04-WOOD	Revolon Slough East Side of Wood Road	Water Column: Cu, Ni, Hg, Se, Zn
			Fish Tisue: Hg, Se
Calleguas Creek	03-CAMAR	Calleguas Creek at University Drive	Water Column: Cu, Ni, Hg, Se, Zn
	03D-CAMR	Camrosa Water Reclamation Plant	Water Column: Cu, Ni, Hg, Se, Zn
	9AD-CAMA	Camarillo Water Reclamation Plant	Water Column: Cu, Ni, Hg, Se, Zn
Conejo Creek	10D-HILL	Hill Canyon Wastew ater Treatment Plant	Water Column: Cu, Ni, Hg, Se, Zn

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Implementation Plan	The final WLAs will be included for permitted stormwater discharges, POTWs, and other NPDES discharges in accordance with the compliance schedules provided in Table 7-19.2. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of this TMDL. In addition, the implementation schedule was developed with the assumption that a WER for copper and a SSO for nickel will proceed following the TMDL. Should adoption and approvals of the WER and SSO not proceed, additional implementation actions could be required. The implementation plan includes discussion of implementation actions to address these conditions. WLAs established for Simi Valley WQCP, Camrosa WRP, and Moorpark WTP in this TMDL will be implemented through NPDES permit limits. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The Hill Canyon and Camarillo WRPs are working towards discontinuing the discharge of effluent to Conejo Creek. If this plan is implemented, the POTW allocations for the watershed will be achieved by reduction of effluent discharges to the stream. The implementation plan includes sufficient time for this plan to be implemented. However, if this plan is altered, the POTWs will need to meet allocations through other methods such as source control activities. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluate the TMDL to incorporate such guidance. In accordance with current practice, a group concentration-based WLA has been developed for all permitted stormwater discharges, including municipal separate storm sewer systems (MS4s), Caltrans, general industrial and construction stormwater permits, and Naval Air Weapons Station Point Mugu. MS4 WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of Revolon Slough and Calleguas Creek, and in Mugu Lagoon and will be achieved through the implementation of BMPs as outlined in the implementation plan. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. If BMPs are to be used, the Regional Board will need to detail its findings and conclusions supporting the use of BMPs in the NPDES permit fact sheets. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluate the TMDL to incorporate such guidance. The Regional Board may revise these WLAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Implementation Plan (continued)	LAs will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP) and Conditional Waiver for Discharges from Irrigated Lands adopted by the Los Angeles Regional Water Quality Control Board on November 3, 2005. Compliance with LAs will be measured in-stream at the base of Revolon Slough and Calleguas Creek and in Mugu Lagoon and will be achieved through the implementation of BMPs consistent with the NPSPCP and the Conditional Waiver Program. The Conditional Waiver Program requires the development of an agricultural water quality management plan (AWQMP) to address pollutants that are exceeding receiving water quality objectives as a result of agricultural discharges. Therefore, implementation of the load allocations will be through the development of an AWQMP for metals and selenium. Implementation of the load allocations will also include the coordination of BMPs being implemented under other required programs to ensure metal discharges are considered in the implementation. Additionally, agricultural dischargers will participate in educational seminars on the implementation of BMPs as required under the Conditional Waiver Program. Studies are currently being conducted to assess the extent of BMP implementation and provide information on the effectiveness of BMPs for agriculture. This information will be integrated into the AWQMP that will guide the implementation of agricultural BMPs in the Calleguas Creek watershed. After implementation of these actions, compliance with the allocations and TMDL will be evaluated and the allocations reconsidered if necessary based on the special studies and monitoring plan section of the implementation plan Agricultural and PSDs dischargers will have a required 25%, 50% and 100% reduction in the difference between the current loadings and the load allocations at 5, 10 and 15 years after the effective date, respectively. Achievement of required reductions will be evaluated based on progress towards BMP implementation as outlined in the UWQMPs, AWQMP, Conditional Waiver Program, and in consideration of background loading information, if available. If the interim reductions are not met, the dischargers will submit a report to the Executive Officer detailing why the reductions were not met and the steps that will be taken to meet the required reductions. As shown in Table 7-19.2, implementation of LAs will be conducted over a period of time to allow for implementation of the BMPs, as well as coordination with special studies and implementation actions resulting from other TMDL Implementation Plans for the Calleguas Creek watershed. The Regional Board may revise the LAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL.

Table 7-19.2 Calleguas Creek Watershed Metals and Selenium TMDL: Implementation Schedule

Item	Implementation Action[1]	Responsible Party	Completion Date
1	Effective date of interim Metals and Selenium TMDL waste load allocation (WLAs), and final WLAs for other NPDES permittees	POTWs, Permitted Stormwater Dischargers[2] (PSD), Other NPDES Permittees	Effective date of the amendment
2	Effective date of interim Metals and Selenium TMDL load allocation (LAs)	Agricultural Dischargers	Effective date of the amendment
3a	Submit Calleguas Creek Watershed Metals and Selenium Monitoring Program	POTWs, PSD, Agricultural Dischargers	Within 3 months after the effective date of the amendment
3b	Implement Calleguas Creek Watershed Metals and Selenium Monitoring Program	POTWs, PSD, Agricultural Dischargers	Within 3 months of Executive Officer approval of the monitoring program
3c	Re-calibrate HSPF water quality model based on first year of monitoring data	POTWs, PSD, Agricultural Dischargers	1 year after submittal of first annual monitoring report
4a	Conduct a source control study, develop and submit an Urban Water Quality Management Program (UWQMP) for copper, mercury, nickel, and selenium	MS4s	Within 2 years after the effective date of the amendment
4b	Conduct a source control study, develop and submit an UWQMP for copper, mercury, nickel, and selenium	Caltrans	Within 2 years after the effective date of the amendment
4c	Conduct a source control study, develop and submit an UWQMP for copper, mercury, nickel, and selenium	NAWS point Mugu (US Navy)	Within 2 years after the effective date of the amendment
5	Implement UWQMP	PSD	Within 1 year of approval of UWQMP by the Executive Officer
6	Develop and submit an Agricultural Water Quality Management Program (AWQMP) as described in the Conditional Waiver Program	Agricultural Dischargers	Within 2 years after the effective date of the amendment
7	Implement AWQMP	Agricultural Dischargers	Within 1 year of approval of AWQMP by the Executive Officer
8	Develop WLAs and LAs for zinc if impairment for Mugu Lagoon is maintained on the final 2006 303(d) list	Regional Board or USEPA	Within 1 year of the final 2006 303(d) list
9	Submit progress report on salinity management plan, including status of reducing WRP effluent discharges to Conejo and Calleguas Creek reaches of the watershed	POTWs	Within 3 years after the effective date of the amendment
10	If progress report identifies the effluent discharges reduction is not progressing, develop and implement source control activities for copper, mercury, nickel, and selenium	POTWs	Within 4 years after the effective date of the amendment

Item	Implementation Action[1]	Responsible Party	Completion Date
11	Re-evaluation of POTW interim waste load allocations for copper, mercury, and nickel	POTWs	Within 5 years after the effective date of the amendment
12a	Evaluate the results of the OCs TMDL, Special Study – Calculation of sediment transport rates in the Calleguas Creek watershed for applicability to the metals and selenium TMDL	Agricultural Dischargers, PSD	Within 6 months of completion of the study
12b	Include monitoring for copper, mercury, nickel, and selenium in the OC pesticides TMDL, special Study – Monitoring of sediment by source and land use type	Agricultural Dischargers, PSD	Within 2 years after the effective date of the amendment
12c	Expand scope of the OC Pesticide TMDL, Special Study – Examination of food webs and accumulation in the Calleguas Creek watershed to ensure protection of wildlife to include mercury	Interested parties	If necessary, prior to end of the implementation period
12d	Evaluate the results of the OC Pesticides TMDL, Special Study – Effects of BMPs on Sediment and Siltation to determine the impacts on metals and selenium	Agricultural Dischargers, PSD	Within 6 months of completion of the study
13a	Submit work plan for Special Study #1 (Optional) – Identification of Natural Sources Exclusion	Agricultural Dischargers, PSD	Within 1 year after the effective date of the amendment
13b	Submit results of Special Study #1 (Optional) – Identification of Natural Sources Exclusion	Agricultural Dischargers, PSD	Within 3 years of approval of workplan by Executive Officer
14a	Submit work plan for Special Study #2 – Identification of selenium Contaminated Groundwater Sources	POTWs, PSD, and Agricultural Dischargers	Within 1 year after the effective date of the amendment
14b	Submit results of Special Study #2 – Identification of selenium Contaminated Groundwater Sources	POTWs, PSD, and Agricultural Dischargers	Within 1 year of approval of workplan by Executive Officer
15a	Submit work plan for Special Study #3 – Investigation of Metals' "Hot Spot" and Natural Soil	PSD and Agricultural Discharger	Within 1 year after the effective date of the amendment
15b	Submit results of Special Study #3 – Investigation of metals' "Hot Spot" and Natural Soil	PSD and Agricultural Discharger	Within 2 years of approval of workplan by Executive Officer
16	Special Study #4 (Optional) – Determination of WER for copper in Revolon Slough	PSD and Agricultural Dischargers	If necessary, prior to end of the implementation period
17	Special Study #5 (Optional) – Determination of Site Specific Objective for Mercury and Selenium	PSD and Agricultural Dischargers	If necessary, prior to end of the implementation period
18	Evaluate effectiveness of BMPs implemented under the AWQMP and UWQMP in controlling metals and selenium discharges	PSD and Agricultural Dischargers	6 years after the effective date of the amendment
19	Evaluate the results of implementation actions 14 and 15 (Special Study #2 & #3) and implement actions identified by the studies	POTWs, PSD, and Agricultural Dischargers	Within 1 year after the completion of the studies

Item	Implementation Action[1]	Responsible Party	Completion Date
20	If needed, implement additional BMPs or revise existing BMPs to address any issues not covered by implementation efforts of related Calleguas Creek watershed TMDLs (Nutrients, Toxicity, OC Pesticides, PCBs, and Siltation) and the Conditional Waiver Program	Agricultural Dischargers	7 years after the effective date of the amendment
21	Consider nickel SSO proposed by stakeholders	Regional Board	1 years after the effective date of the amendment
22	Publicly notice tentative copper water effects ratio for Regional Board consideration, if deemed appropriate based on peer review	Regional Board Staff	Within 2 months of receipt of peer review comments
23	Based on the result from items 1-23, Regional Board will consider re-evaluation of the TMDLs, WLAs, and LAs if necessary	Regional Board	2 years from submittal of information necessary for re-evaluation
24	POTWs will be required to reduce loadings by 50%, and 100% of the difference between the current loading and the WLAs at 8 and 10 years after the effective date, respectively.	POTWs	8 and 10 years after the effective date of the amendment
25	Re-evaluation of Agricultural and Urban load and waste load allocations for copper, mercury, nickel, and selenium based on the evaluation of BMP effectiveness. Agricultural and urban dischargers will have a required 25%, 50%, and 100% reduction in the difference between the current loadings and the load allocations at 5, 10, and 15 years after the effective date, respectively.	Agricultural and PSDs	5, 10, and 15 years after the effective date of the amendment
26	Stakeholders and Regional Board staff will provide information items to the Regional Board, including: progress toward meeting TMDL load reductions, water quality data, and a summary of implementation activities completed to date	Regional Board	2 years after the effective date, and every 2 years following
27	Achievement of Final WLAs and attainment of water quality standards for copper, mercury, nickel, and selenium	POTWs	Within 10 years after the effective date of the amendment[3]
28	Achievement of Final WLAs and LAs and attainment of water quality standards for copper, nickel, mercury and selenium	Agricultural Dischargers, PSD	Within 15 years after the effective date of the amendment[3]

1 The Regional Board regulatory programs addressing all discharges in effect at the time this implementation task is due may contain requirements substantially similar to the requirements of these implementation tasks. If such requirements are in place in another regulatory program including other TMDLs, the Executive Officer may revise or eliminate this implementation task to coordinate this TMDL implementation plan with other regulatory programs.

2 Permitted Stormwater Dischargers (PSD) include MS4s, Caltrans, the Naval Air Weapons Station at Point Mugu, and general industrial and construction permittees.

3 Date of achievement of WLAs and LAs based on the estimated timeframe for educational programs, special studies, and implementation of appropriate BMPs and associated monitoring. The Conditional Waiver Program will set timeframes for the BMP management plans.

7-21 Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 8, 2006.

This TMDL was approved by:
The State Water Resources Control Board on November 15, 2006.
The Office of Administrative Law on February 20, 2007.
The U.S. Environmental Protection Agency on March 26, 2007.

The effective date of this TMDL is: April 27, 2007.

The following table includes all the elements of this TMDL.

Table 7-21.1. Ballona Creek, Estuary, and Tributaries Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation (LREC) designated for Ballona Creek Reach 2, and non-contact recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine and fresh water to protect the contact and non-contact recreation uses. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: **In Marine Waters Designated for Water Contact Recreation (REC-1)** <u>1. Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	**In Fresh Waters Designated for Water Contact Recreation (REC-1)** 1. Geometric Mean Limits a. *E. coli* density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. *E. coli* density shall not exceed 235/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. In Fresh Waters Designated for Limited Water Contact Recreation (LREC-1)[2] 1. Geometric Mean Limits a. *E. coli* density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. *E. coli* density shall not exceed 576/100 ml. **In Fresh Waters Designated for Non-Contact Water Recreation (REC-2)** 1. Geometric Mean Limits a. Fecal coliform density shall not exceed 2000/100 ml. 2. Single Sample Limits a. Fecal coliform density shall not exceed 4000/100 ml. The targets apply throughout the year. Determination of attainment of the targets will be at in-stream monitoring sites to be specified in the compliance monitoring report. Implementation of the above REC-1 and LREC-1 bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.) Implementation of the REC-2 target will be as specified in the Basin Plan. The REC-2 bacteria objectives allow for a 10% exceedance frequency of the single sample limit in samples collected during a 30-day period. This allowance, which is based on an acceptable level of health risk, will be applied in lieu of the allowable exceedance days discussed earlier. As with the other REC-1 and LREC-1 objectives, the geometric mean target for REC-2, which is based on a rolling 30-day period, will be strictly adhered to and may not be exceeded at any time.
Source Analysis	The major contributors of flows and associated bacteria loading to Ballona Creek and Estuary, are dry- and wet-weather urban runoff discharges from the storm water conveyance system. Run-off to Ballona Creek is regulated as a point source under the Los Angeles County MS4 Permit, the Caltrans Storm Water Permit, and the General Construction and Industrial Storm Water Permits. In addition to these regulated point sources, the Ballona Estuary receives input from the Del Rey Lagoon and Ballona Wetlands through connecting tide gates.

Element	Key Findings and Regulatory Provisions
Source Analysis (continued)	Preliminary data suggest that the Ballona Wetlands are a sink for bacteria from Ballona Creek and it is therefore not considered a source in this TMDL. Inputs to Ballona Estuary from Del Rey Lagoon, are considered non-point sources of bacterial contamination. This waterbody may be considered for a natural source exclusion if its contributing bacteria loads are determined to be as a result of wildlife in the area, as opposed to anthropogenic inputs. The TMDL will require a source identification study for the lagoon in order to apply the natural source exclusion. Other nonpoint sources in Ballona Creek and Estuary include natural sources from birds, waterfowl and other wildlife. Data do not currently exist to quantify the extent of the impact of wildlife on bacteria water quality in the Estuary.
Loading Capacity	The loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above.
Waste Load Allocations (for point sources)	The Los Angeles County MS4 and Caltrans storm water permittees and co-permittees are assigned waste load allocations (WLAs) expressed as the number of daily or weekly sample days that may exceed the single sample targets equal to the TMDLs established for the impaired reaches (see Table 7.21.2a), and Waste Load Allocations assigned to waters tributary to impaired reaches (Table 7.21.2b). Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event). The County of Los Angeles, Caltrans, and the Cities of Los Angeles, Culver City, Beverly Hills, Inglewood, West Hollywood, and Santa Monica are the responsible jurisdictions and responsible agencies[3] for the Ballona Creek Watershed. The responsible jurisdictions and responsible agencies within the watershed are jointly responsible for complying with the waste load allocation in each reach.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	For the single sample objectives of the impaired REC-1 and LREC-1 reaches, the proposed WLA for summer dry-weather are zero (0) days of allowable exceedances, and those for winter dry-weather and wet-weather are three (3) days and seventeen (17) days of exceedance, respectively. In the instances where more than one single sample objective applies, exceedance of any one of the limits constitutes an exceedance day. The proposed waste load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances. For the single sample objectives of the impaired REC-2 reach, the proposed WLA for all periods is a 10% exceedance frequency of the REC-2 single sample water quality objectives. The proposed waste load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances. In addition to assigning TMDLs for the impaired reaches, Waste Load Allocations and Load Allocations are assigned to the tributaries to these impaired reaches. These WLAs and LAs are to be met at the confluence of each tributary and its downstream reach (see Table 7.21.2b).
Load Allocations (for nonpoint sources)	Load allocations are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site, along with a rolling 30-day geometric mean. Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Del Rey Lagoon is considered a nonpoint source and is therefore subject to load allocations. The proposed LA for summer dry-weather are zero (0) days of allowable exceedances, and those for winter dry-weather and wet-weather are three (3) days and seventeen (17) days of exceedance, respectively. In the instances where more than one single sample objective applies, exceedance of any one of the limits constitutes an exceedance day. The proposed load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances (see Table 7.21.2a). The City of Los Angeles is the responsible jurisdiction for the Del Rey lagoon, and is responsible for complying with the assigned load allocations presented in Table 7.21.2b at the tide gate(s) between the Lagoon and the Estuary. If other unidentified nonpoint sources are directly impacting bacteriological water quality and causing an exceedance of the numeric targets, within the Estuary, the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the monitoring location may have further obligations to identify such sources.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the Caltrans Storm Water Permit, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Each responsible jurisdictions and agency will be required to meet the storm water waste load allocations shared by the LA County MS4 and Caltrans permittees at the designated TMDL effectiveness monitoring points. An iterative implementation approach using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocation. Load allocations for nonpoint sources will be incorporated into Waste Discharge Requirements and MOUs with the responsible jurisdictional agencies. This TMDL will be implemented in two phases over a ten-year period (see Table 7-21.3). Within six years of the effective date of the TMDL, compliance with the allowable number of summer dry-weather (April 1 to October 31), winter dry-weather exceedance days (November 1 to March 31) and the rolling 30-day geometric mean targets for both periods must be achieved. Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved. In order to clearly justify an extended implementation schedule beyond 10 years and up to 14 years from the effective date of the TMDL, the responsible agencies are required to submit additional quantifiable analyses as described below to demonstrate (1) the proposed plans will meet the final WLAs and (2) the proposed implementation actions will achieve multiple water quality benefits and other public goals. The types of approaches proposed coupled with quantifiable estimates of the integrated water resources benefits of the proposed structural and non-structural BMPs included in the Implementation Plan would provide the obligatory demonstration that an integrated water resources approach is being pursued. This demonstration shall include numeric estimates of the benefits, including but not limited to reductions in other pollutants, groundwater recharged, acres of multi-use projects and water (e.g. urban runoff) beneficially reused.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The responsible jurisdictions and the responsible agencies must submit a report to the Executive Officer (see Table 7-21.3) describing how they intend to comply with the dry-weather and wet-weather WLAs. As the primary jurisdiction, the City of Los Angeles is responsible for submitting the implementation plan report described above. In addition, as the responsible agency for Del Rey Lagoon, the City of Los Angeles must submit a report detailing how it intends to comply with the load allocations assigned to this waterbody. Alternatively, the City of Los Angeles may submit data clearly demonstrating that Del Rey Lagoon is not a source, for the Regional Board's consideration.. The Regional Board intends to reconsider this TMDL, within 4 years of its effective date to incorporate modifications to the WLAs based on results of the scheduled reconsideration of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board also intends to re-asses the WLAs for Benedict Canyon Channel, Sepulveda Channel, and Centinela Creek based on results of the required compliance monitoring, and/or any voluntary beneficial use investigations.
Margin of Safety	By directly applying the numeric water quality standards and implementation procedures as Waste Load Allocations, there is little uncertainty about whether meeting the TMDLs will result in meeting the water quality standards.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading to the Ballona Creek, Ballona Estuary, and Sepulveda Channel is during wet weather when monitoring data indicate greater exceedance probabilities of the single sample bacteria objectives than during dry-weather.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	The Santa Monica Bay Beaches Bacteria TMDL identified the critical condition within wet weather more specifically, in order to set the allowable number of exceedances of the single sample limit days. The 90th percentile storm year in terms of wet days was used as the reference year. The 90th percentile year was selected for several reasons. First, selecting the 90th percentile year avoids an untenable situation where the reference system is frequently out of compliance. Second, selecting the 90th percentile year allows responsible jurisdictions and responsible agencies to plan for a 'worst-case scenario', as a critical condition is intended to do.
Monitoring	The TMDL effectiveness monitoring program will assess attainment of the allowable exceedances for Ballona Creek, Ballona Estuary, and Sepulveda Channel, and the WLAs for the tributaries. Responsible jurisdictions and responsible agencies shall conduct daily or systematic weekly sampling at a minimum of two locations within Ballona Estuary and Reach 2 of Ballona Creek, at least one location each in Reach 1 of Ballona Creek and Sepulveda Channel, and at the confluence with Centinela Creek and Benedict Canyon Channel, to determine compliance. Similar monitoring at the connecting tide gates of Del Rey Lagoon is also required. Where monitoring locations are located at or close to the boundary of two reaches, data from sampling points will also be used to assess the immediate downstream reach. This will ensure that the downstream reaches, which have more stringent water quality objectives, are adequately protected. If the number of exceedance days is greater than the allowable number of exceedance days in the REC-1 and LREC-1 waters, and/or the frequency of exceedance is greater than 10% in the REC-2 waters, the responsible jurisdictions and/or responsible agencies shall be considered not to be attaining the TMDLs and/or assigned allocations (non-attaining). Responsible jurisdictions or agencies shall not be deemed non-attaining if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If an in-stream location is non-attaining as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling at the existing monitoring location until all single sample events meet bacteria water quality objectives.

Element	Key Findings and Regulatory Provisions
Special Studies	Should the jurisdictional agency for Del Rey Lagoon opt for the natural source exclusion, the TMDL requires that a separate bacteria source identification study be conducted to determine its eligibility. The study should identify all probable sources of bacteria loads, their estimated contributions to the Lagoon, and a determination of the frequency of exceedances of the single sample bacteria objectives caused by the identified natural sources.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

2 The bacteriological objectives for the LREC-1 use designation were provided in a Basin Plan Amendment adopted by State Board on January 20, 2005, and subsequently approved by the Office of Administrative Law and finally by U.S. EPA on February 17, 2006.

3 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local agencies that are permittees or co-permittees on a municipal storm water permit, (2) local or state agencies that have jurisdiction over Ballona Creek and Estuary, and (3) the California Department of Transportation pursuant to its storm water permit.

Table 7-21.2a: Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: Final Allowable Exceedance Days by Reach

Time Period	Ballona Estuary, Ballona Creek Reach 2, and Sepulveda Channel *	Ballona Creek Reach 1**
Summer Dry-Weather (April 1 to October 31)	Zero (0) exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives
Winter Dry-Weather (November 1-March 31)	Three (3) exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives
Wet-Weather (days with ≥0.1 inch of rain + 3 days following the rain event)	17*** exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives

* Exceedance days for Ballona Estuary based on REC-1 marine water numeric targets; for Ballona Creek Reach 2 based on LREC-1 freshwater numeric targets; and for Sepulveda Channel, based on fresh water REC-1 numeric targets

** Exceedance frequency for Ballona Creek Reach 1 based on freshwater REC-2 numeric targets

*** In Reach 2, the greater of the allowable exceedance days under the reference system approach or high flow suspension shall apply.

Table 7-21.2b: Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: WLAs and LAs for tributaries to the Impaired Reaches.

Tributary	Point of Application	Water Quality Objectives	Waste Load Allocation (No. exceedance days)
Ballona Creek Reach 1	At confluence with Reach 2	LREC-1 Freshwater	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17*) winter wet weather* For geometric mean objectives: *(0) for all periods*
Benedict Canyon Channel	At confluence with Reach 2	LREC-1 Freshwater	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17*) winter wet weather* For geometric mean objectives: *(0) for all periods*
Ballona Creek Reach 2	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*
Centinela Creek	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*
Del Rey Lagoon	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3)winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*

* At the confluence with Reach 2, the greater of the allowable exceedance days under the reference system approach or high flow suspension shall apply.

Sepulveda Channel was not assigned a waste load allocation at its confluence with Reach 2 since the TMDL requires the more stringent REC-1 objectives to be met in this waterbody, which should lead to the attainment of the less stringent LREC-1 objectives of the downstream reach.

Table 7-21.3 Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: Significant Dates

Date	Action
Responsible Jurisdictions for the Waste Load Allocations	
12 months after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must submit, for Regional Board approval, a comprehensive bacteria water quality monitoring plan for the Ballona Creek Watershed. The plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan and subsequent amendments have established objectives The plan must also include a minimum of two sampling locations (mid-stream and downstream) in Ballona Estuary, Ballona Creek (Reach 1 and 2), and their tributaries. The draft monitoring report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
$2^{1}/_{2}$ years after the effective date of the TMDL	Responsible jurisdictions and agencies must provide a draft Implementation Plan to the Regional Board outlining how each intends to cooperatively achieve compliance with the dry-weather and wet-weather TMDL Waste Load Allocations. The report shall include implementation methods, an implementation schedule, and proposed milestones. The description of the implementation methods and milestones shall include a technically defensible quantitative linkage to the interim and final waste load allocations (WLAs). The linkage should include target reductions in stormwater runoff and/or fecal indicator bacteria. The plan shall include quantitative estimates of the water quality benefits provided by the proposed structural and non-structural BMPs. Estimates should address reductions in exceedance days, bacteria concentration and loading, and flow in the drain and at each beach compliance monitoring location. As part of the draft plan, responsible agencies must submit results of all special studies and/or Environmental Impact Assessments, designed to determine feasibility of any strategy that requires diversion and/or reduction of Creek flows. If a responsible jurisdiction or agency is requesting a longer schedule for wet-weather compliance based on an integrated approach, the plan must include a clear demonstration that the plan meets the criteria of an IWRA, and a clear demonstration of the need for the proposed schedule. Compliance with the wet-weather allocations shall be as soon as possible but under no circumstances shall it exceed the time frame adopted in the TMDL for non-integrated approaches or for an integrated approach.

Date	Action
$2^1/_2$ years after the effective date of the TMDL (continued)	The draft Plan shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
3 months after receipt of Regional Board comments on the draft plan	Responsible jurisdictions and agencies submit a Final Implementation Plan to the Regional Board.
Responsible agencies for Load Allocations	
1 year after the effective date of the TMDL	Responsible agencies must submit, for Regional Board approval, separate comprehensive bacteria water quality monitoring plans for inputs from Del Rey Lagoon and the Ballona Wetlands to the Ballona Estuary. Each plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan and subsequent amendments have established objectives The plan must also include a minimum of one sampling location at the connecting tide gate(s). The draft monitoring reports shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days. Once a coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
3 years after the effective date of the TMDL	If the responsible agency for the Del Rey Lagoon intends to pursue a natural source exclusion, it shall submit the results of separate natural source study for the Lagoon to the Executive Officer of the Regional Board. The study shall include a comprehensive assessment of all sources of bacteria loads to the Lagoon and estimates of their individual contributions. In addition, a determination of the number of exceedance days caused by these sources should be made. These studies shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.

Date	Action
Responsible Agencies for WLAs and LAs* (*Only if not eligible for natural source exclusion(s)	
4 years after the effective date of the TMDL	The Regional Board shall reconsider this TMDL to: (1) Re-assess the allowable winter dry-weather and wet-weather exceedance days based on a re-evaluation of the selected reference watershed and consideration of other reference watersheds that may better represent reaches of Ballona Creek and Estuary, (2) Consider whether the allowable winter dry-weather and wet-weather exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (3) Re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision. (5) Consider natural source exclusions for bacteria loading from Del Rey Lagoon and the Ballona Wetlands based on results of the source identification study. (6) Re-assess WLAs for Benedict Canyon Channel, Sepulveda Channel, and Centinela Creek based on results of the required compliance monitoring, and/or any voluntary beneficial use investigations.
6 years after the effective date of the TMDL:	Achieve compliance with the allowable exceedance days for summer and winter dry-weather as set forth in Table 6-1 and rolling 30-day geometric mean targets.
10 years after effective date of the TMDL or, if an Integrated Water Resources Approach is implemented, up to July 15, 2021.*	Achieve compliance with the allowable exceedance days as set forth in Table 6-1 and rolling 30-day geometric mean targets during wet-weather.

* July 15, 2021 is the final compliance date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL.

7-22 Calleguas Creek Watershed Salts TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 4, 2007.

This TMDL was approved by:

The State Water Resources Control Board on May 20, 2008.
The Office of Administrative Law on November 6, 2008.
The U.S. Environmental Protection Agency on December 2, 2008.

The effective date of this TMDL is: December 2, 2008.

The elements of the TMDL are presented in Table 7-22.1 and the Implementation Plan in Table 7-22.2

Table 7-22.1. Calleguas Creek Watershed Salts TMDL: Elements

<table>
<tr><th>TMDL Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) are identified on the 2002 Clean Water Act Section 303(d) list of water-quality limited segments as impaired due to elevated levels of boron, chloride, sulfate, or total dissolved solids (TDS) (these constitutions are commonly referred to as salts). Salts primarily impact two beneficial uses: agricultural supply and groundwater recharge. Below is 2002 303(d) list of water quality limited segments of the Calleguas Creek watershed:

<table>
<tr><th>Reach Name</th><th>Pollutant/Stressor</th></tr>
<tr><td>Calleguas Creek Reach 3</td><td>Chloride, TDS</td></tr>
<tr><td>Calleguas Creek Reach 6</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 7</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 8</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas creek Reach 9A</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 9B</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 10</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 11</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 12</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 13</td><td>Chloride, Sulfate, TDS</td></tr>
</table>

The list of impaired segments of the Calleguas Creek watershed in the 2002 303(d) list was maintained in the 2006 303(d) list.

The segment of Reach 4 below Laguna Road is tidally influenced and therefore not impaired for chloride, boron, sulfate, and TDS. Consequently, the waste load and load allocations developed for Reach 4 in this TMDL do not apply below Laguna Road.

The goal of this TMDL is to protect and restore the water quality in the Calleguas Creek watershed by controlling the loading and accumulation of salts.</td></tr>
</table>

TMDL Element	Key Findings and Regulatory Provisions
Numeric Targets	Numeric targets are based on the site-specific numeric water quality objectives (WQOs) provided in the Basin Plan.

1. Surface Water Quality Objectives

Site-specific surface water quality objectives for the Calleguas Creek watershed are applicable upstream of Potrero Road. Site specific objectives have not been determined for Calleguas Creek below Potrero Road because the reach is tidally influenced. Below are WQOs for Calleguas Creek upstream of Potrero Road.

Constituent	Water Quality Objective Upstream Potrero Road (mg/L)
Boron	1
Chloride	150
Sulfate	250
TDS	850

2. Groundwater Quality Objectives

Groundwater Basin[1]			Boron (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
DWR Basin No.	**Groundwater Basin as Listed in the 1994 Basin Plan**	**Implementation Areas for Salts TMDL**				
4-6	Pleasant Valley	Conejo and Calleguas/Pleasant Valley	1.0	150	300	700
4-7	Arroyo Santa Rosa	Arroyo Santa Rosa and Conejo/Arroyo Santa Rosa	1.0	150	300	900
4-8	Las Posas Valley – East of Grimes Canyon and Hitch Blvd	Arroyo Simi/South Las Posas	3.0	400	1200	2500
4-8	Las Posas Valley – South of LA Ave between Somis Rd & Hitch Blvd	Arroyo Las Posas/ South Las Posas	1.0	250	700	1500
4-8	Las Posas Valley – North Las Posas Area	Arroyo Las Posas/ North Las Posas	1.0	150	250	500
4-9	Simi Valley	Arroyo Simi/Simi Valley	1.0	150	600	1200
4-10	Conejo Valley	Arroyo Conejo/ Conejo Valley	1.0	150	250	800
4-15	Tierra Rejada	Arroyo Santa Rosa/ Tierra Rejada	0.5	100	250	700
4-19	Thousand Oaks	Arroyo Conejo/ Thousand Oaks	1.0	150	700	1400

[1] The groundwater quality objectives specified in this table are equivalent to the groundwater quality objectives in the 1994 Basin Plan. Groundwater basins are numbered in the first column according to Bulletin 118-80 (Department of Water Resources, 1980). Designated groundwater basins in the 1994 Basin Plan are specified in the second column and groundwater basin descriptions of Calleguas Creek used in this TMDL are listed in the third column of the table.

TMDL Element	Key Findings and Regulatory Provisions
Source Analysis	Sources of salts in the watershed include water supply (water imported from the State Water Project or Freeman Diversion and deep aquifer groundwater pumping), water softeners that discharge to publicly owned treatment works (POTWs), POTW treatment chemicals, atmospheric deposition, pesticides and fertilizers, and indoor water use (chemicals, cleansers, food, etc.). These salts are then transported through POTW discharges and runoff to surface water, shallow groundwater, and/or stranded on the watershed in the soils. Salts transported in the surface water to the ocean are currently the only salts that are exported from the watershed. While the concentration of salts in the introduced water is usually below the Basin Plan Objectives, the quantity of water brought into the watershed is sufficient to rank introduced water as the greatest source of salts to the watershed. Salts that are transported during dry weather to the surface water are quantified via the following mechanisms: groundwater pumping, groundwater exfiltration, POTWs, dry weather urban and agricultural runoff. Wet weather loadings from each of these sources have the potential to be significant, but tend to be lower in concentration and do not occur during the critical conditions for salts. Wet weather loads are significant from the perspective of transporting stranded salts off the watershed.
Linkage Analysis	The linkage analysis for salts focuses on the surface water concentrations of salts. However, surface water concentrations are only one component of the watershed salts issue. Because it is difficult to model other aspects of the salt problem (i.e. surface water and groundwater interactions, stranded salts), two simplified approaches have been used to demonstrate that salts will be removed from the watershed, which should have a correspondingly positive impact on surface water and groundwater salts concentrations. First, a surface water model was developed to provide a linkage between sources and surface water quality and to demonstrate the impact of projects on receiving water quality in the watershed. Second, a salt balance was developed to quantify the removal of salts from the watershed with the goal of achieving a mass balance in which the mass of boron, sulfate, TDS and chloride imported into Calleguas Creek subwatersheds is no more than the mass of boron, sulfate, TDS and chloride exported from the Calleguas Creek subwatershed. Achieving a salt balance in the watershed will prevent additional build-up of salts in any medium in the watershed and protect ground water supplies from increasing in salt concentrations. The Calleguas Creek Modeling System is a mass balance based model that was developed for the surface water to provide a linkage between sources and surface water quality. To estimate the salts balance in the watershed, a simple chloride mass balance was developed by the Camrosa Water District (Hajas, 2003a) and modified to address the other salts.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations	**<u>A. POTWs</u>** The TMDL includes waste load allocations (WLAs) for five POTWs in the Calleguas Creek watershed: Simi Valley Water Quality Control Plant (WQCP), Hill Canyon Wastewater Treatment Plan (WWTP), Moorpark WWTP, Camarillo Water Reclamation Plant (WRP), and Camrosa Water Reclamation Facility (WRF). At the end of the implementation period, only Simi Valley WQCP and the Hill Canyon WWTP are expected to discharge to surface waters. Moorpark WWTP and Camrosa WRF currently discharge directly to ponds under dry weather conditions. As part of the TMDL implementation, the Renewable Water Resources Management Program (RWRMP) will introduce treated wastewater from the Camarillo WRP into the Camrosa recycled water storage and distribution system. Surplus treated wastewater from Camarillo WRP and Camrosa WRF will be discharged at a point downstream of Potrero Road Bridge to Calleguas Creek. Dry weather WLAs are included for the case when Camarillo WRP, Camrosa WRF, and Moorpark WWTP need to discharge to the stream (for example, if there is insufficient recycled water demand during the wet season). Including WLAs for these POTWs ensures that water quality objectives are not exceeded as a result of their discharge. POTW mass-based WLAs are calculated as the POTW effluent flow rate multiplied by the water quality objective and include a mass-based adjustment factor (AF) that is subtracted from the product of the flow-rate and the water quality objective. The adjustment factor is used to link POTW allocations to the required reductions in background loads. The adjustment factors are implemented through mechanisms that export salts out of the subwatershed, such as groundwater pumping, to meet the salt balance requirements. To ensure that the loading capacity is achieved in surface water and the reductions in background loads are achieved, minimum salt exports shown below are required for POTWs and are included in WLAs as a component of the adjustment factors. If the background load reductions are not achieved, POTWs shall be responsible for providing additional load reductions to achieve water quality standards. The AF is set equal to the difference between the minimum salts export requirement to attain a salt balance in the subject reaches and the actual salts export. If the calculated annual dry weather salt exports from the subwatershed to which the POTW discharges are less than the minimum required exports for the previous year and the annual average receiving water concentration at the base of the subwatershed to which the POTW discharges exceeds water quality objectives for the previous year, the POTW allocations will be reduced using the adjustment factor.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	The adjustment factors are also used to address unusual conditions in which the inputs to the POTWs from the water supply may challenge the POTWs ability to meet the assigned WLAs. The adjustment factor allows for the additional POTW loading only when the water quality objectives are met in the receiving waters. POTW allocations can be adjusted upwards when imported water supply chloride concentrations exceed 80 mg/L and discharges from the POTW exceed the WLA. In order to apply the AF to the assigned WLAs, the POTW is required to submit documentation of the water supply chloride concentrations, receiving water chloride concentration, the effluent mass, and evidence of increased salt exports to offset the increased discharges from the POTW to the RWQCB for approval. WLAs shown in table below apply to POTWS during dry weather when the flows in the receiving water are below the 86th percentile flow. During wet weather, the loading capacity of the stream is significantly increased by stormwater flows with very low salt concentrations. Any discharges from the POTWs during wet weather would be assimilated by these large storm flows and would not cause exceedances of water quality objectives. Boron is only listed in the Simi and Pleasant Valley (Revolon) subwatersheds and exceedances of boron do not occur in other portions of the watershed. Therefore, boron allocations are only included for the Simi Valley WQCP. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The monthly average interim limits are set equal to the 95th percentile of available discharge data.

1. Minimum Salt Export Requirements for Adjustment Factor [a]

POTW	Minimum Chloride Export (lb/day)	Minimum TDS Export (lb/day)	Minimum Sulfate Export (lb/day)	Minimum Boron Export (lb/day)
Simi Valley WQCP	460	3220	9120	3.3
Moorpark WWTP	460	3220	9120	3.3
Hill Canyon WWTP	1060	7920	4610	0
Camrosa WRF	1060	7920	4610	0
Camarillo WRP	1060	7920	4610	0

[a] Minimum export requirements include a 10% Margin of Safety.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	**2. Interim Monthly Average WLAs for POTWs**

POTW	Chloride (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Boron (mg/L)
Simi Valley WQCP	183	955	298	N/A
Hill Canyon WWTP	189	N/A	N/A	N/A
Moorpark WWTP	171	N/A	267	N/A
Camarillo WRP	216	1012	283	N/A
Camrosa WRF*	N/A	N/A	N/A	N/A

* Camrosa WRF has not discharged to surface water during the period under which interim limits were calculated. When effluent data are available, the Regional Board may adopt interim WLAs for Camrosa WRF.

N/A: The 95th percentile concentration is below the Basin Plan objective so interim limits are not necessary.

3. Final WLAs for POTWs[a,d]

POTW	Chloride (lb/day) [c]	TDS (lb/day) [c]	Sulfate (lb/day) [c]	Boron (lb/day) [c]
Simi Valley WQCP	150*Q-AF	850*Q-AF	250*Q-AF	1.0*Q-AF
Hill Canyon WWTP	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Moorpark WWTP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camarillo WRP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camrosa WRF[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A

a. The allocations shown only apply during dry weather (as defined in this TMDL). During wet weather discharges from the POTWs do not cause exceedances of water quality objectives.

b. These POTWs are not expected to discharge after the end of the implementation period.

c. AF is the adjustment factor and equals the difference between the minimum salts export requirement and the actual salts export.

d. Q represents the POTW flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the flow.

N/A Boron is not listed in the reaches to which the POTW discharges. No WLA is required.

B. Urban Runoff

Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees. Permitted stormwater dischargers are assigned a dry weather wasteload allocation equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Waste load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at low concentrations, these dischargers meet water quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	Interim limits are assigned for dry weather discharges from areas covered by NPDES stormwater permits to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 267 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Permitted Stormwater Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

1. Interim Dry Weather WLAs for Permitted Stormwater Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.3
Chloride Total	230
Sulfate Total	1289
TDS Total	1720

2. Final Dry Weather WLAs for Permitted Stormwater Dischargers

Subwatershed	Critical Condition Flow Rate (mgd)	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	1.39	1,738	9,849	2,897	12
Las Posas	0.13	157	887	261	N/A
Conejo	1.26	1,576	8,931	2,627	N/A
Camarillo	0.06	72	406	119	N/A
Pleasant Valley (Calleguas)	0.12	150	850	250	N/A
Pleasant Valley (Revolon)	0.25	314	1,778	523	2

C. Final WLAs for Other NPDES Dischargers

Concentration-based WLAs are assigned at the Basin Plan objectives for other NPDES dischargers.

Constituent	Allocation (mg/L)
Chloride	150
TDS	850
Sulfate	250
Boron[a]	1.0

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	Other NPDES dischargers include, but are not limited to, permitted groundwater cleanup projects that could have significant salt concentrations as a result of the stranded salts in the shallow groundwater basins being treated. To facilitate the cleanup of the basins prior to alternative discharge methods (such as the brine line) being available, interim limits for other NPDES dischargers will be developed on a case-by-case basis and calculated as a monthly average using the 95th percentile of available discharge data.
Load Allocations	Dry weather load allocations are assigned as a group allocation to irrigated agricultural discharges. The load allocation (LA) is equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at a typically low concentration, these dischargers should meet water quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours. Interim limits are assigned for dry weather discharges from irrigated agricultural areas to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 499 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Irrigated Agricultural Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

I. Interims Load Allocations for Irrigated Agricultural Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.8
Chloride Total	230
Sulfate Total	1962
TDS Total	3995

II. Final Load Allocations for Irrigated Agricultural Dischargers

Subwatershed	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	641	3,631	1,068	4
Las Posas	2,109	11,952	3,515	N/A
Conejo	743	4,212	1,239	N/A
Camarillo	59	336	99	N/A
Pleasant Valley	305	1,730	509	N/A
Revolon	7,238	41,015	12,063	48

TMDL Element	Key Findings and Regulatory Provisions
Margin of Safety	A margin of safety (MOS) for the TMDL is designed to address uncertainties in the analysis that could result in targets not being achieved in the waterbodies. The primary uncertainties associated with this TMDL include the impact of implementing a salt balance on receiving water quality. The effect of the salt balance is estimated by the mass-balance and subject to the following uncertainties: 1) the flow rates used to determine the loading capacity may change due to TMDL implementation, 2) the use of a daily load for determining allocations and an annual mass balance to attain water quality objectives, and 3) the sources of salts may not be completely known. Both implicit and explicit MOS are included for this TMDL. The implicit MOS stems from the use of conservative assumptions made during development of the TMDL. The mass of salts transported out of the watershed during wet weather is on average over 15% of the annual mass of salts introduced to the watershed for all constituents. The salt export during wet weather ranges from 7% to 41% for TDS, 9% to 48% for chloride, and 13% to 89% for sulfate of the export required to meet a salt balance in the watershed. This mass is not used to determine compliance with the salt balance and represents a significant implicit margin of safety. The model also contains a component that serves to model the impact of "stranded" salts in the watershed. The component assumes low irrigation efficiencies and the ability of all salts applied as irrigation water anywhere in the watershed to be discharged to receiving water in critical years. This likely overestimates the impact of "stranded" salts and results in a higher concentration of salts due to irrigation in the receiving water. An explicit MOS of 10% is applied to the adjustment factors for the POTWs to account for the uncertainties in the TMDL analysis. By applying the margin of safety to the adjustment factor, more salts are required to be exported than are necessary to offset the background loads in the watershed. This additional salt export provides a margin of safety on the salt balance to address uncertainties that the salt balance will result in compliance with water quality objectives. The 10% explicit MOS is determined sufficient to address the uncertainties associated with the estimated impact of the salt balance on receiving water loadings.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Increased growth requires additional water. Therefore, future growth could result in increased loads of salts being imported into the watershed. However, the TMDL implementation plan is designed to maintain a salts balance in the watershed. If additional salts are imported into the watershed, a larger volume of salts will also be exported out of the watershed to maintain the balance. Consequently, increased imports from future growth are not expected to result in higher concentrations in receiving waters.

TMDL Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	The critical condition for salts is during dry weather periods. During wet weather, stormwater flows dilute the salt discharges and receiving water concentrations are significantly lower than water quality objectives. Dry weather, defined as days with flows lower than the 86th percentile flow and no measurable precipitation, is a critical condition regardless of the dry weather flows in the stream. The driving conditions for exceedances of water quality objectives are the concentrations in the water supply (which is driven by surface water concentrations in Northern California) and the previous year's annual precipitation and corresponding flows. Elevated salts concentrations during dry weather occur when stranded salts are discharged into the surface water after higher than average rainfall years. The elevated concentrations occur during years when the previous annual flow is greater than the 75th percentile of the annual flows for the watershed (critical year). The higher concentrations occur during the dry periods of critical years regardless of whether the annual flow for the critical year is an average flow year, higher than average year, or lower than average year. The key parameter determining a critical year is the total annual flow volume for the previous year. Based on model results, four critical years were defined based on modeled results that resulted in receiving water concentrations greater than the 99th percentile concentration during at least 10% of the dry period. The critical years identified from the model occur with conditions similar to what occurred in 1978, 1979, 1983 and 1998.
Special Studies and Monitoring Plan	**<u>Special Studies</u>** Several special studies are planned to improve understanding of key aspects related to achievement of WLAs and LAs for the Salts TMDL. ***1. Special Study #1 (Optional) – Develop Averaging Periods and Compliance Points*** The TMDL technical report has provided information that shows instantaneous salts objectives may not be required to protect groundwater recharge and agricultural beneficial uses. It is possible that the beneficial uses will be protected and a salt balance achieved without achieving instantaneous water quality objectives in all reaches of the watershed. This optional special study is included to allow an investigation of averaging periods for the salts objectives in the CCW. Additionally, this study will investigate the locations of beneficial uses and the possibility of identifying compliance points for the salts objectives at the point of beneficial use impacts. The use of compliance points would alleviate the need to develop site-specific objectives for the reaches of the watershed upstream of the POTW discharges (described in Special Study #3) while still ensuring the protection of beneficial uses. Sensitive beneficial uses are not present in the upper reaches and POTW discharges dilute the salts from the upper reaches and may allow compliance with the objectives at the point of groundwater recharge downstream. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***2. Special Study #2 (Optional) – Develop Natural Background Exclusion*** Discharges of groundwater from upstream of the Simi Valley WQCP (Reaches 7 and 8) and Hill Canyon WWTP (Reaches 12 and 13) and downstream of the Camrosa WRF (Reach 3) contain high salts concentrations. Natural marine sediments may contribute to the high concentrations in those discharges. This special study would evaluate whether or not the groundwater discharges in these areas would qualify for a natural sources exclusion. The special study could follow a 'reference system/anti-degradation approach' and/or a 'natural sources exclusion approach' for any allocations included in this TMDL that are proven unattainable due to the magnitude of natural sources. The purpose of a 'reference system/anti-degradation approach' is to ensure water quality is at least as good as an appropriate reference site and no degradation of existing water quality occurs where existing water quality is better than that of a reference site. The intention of a 'natural sources exclusion approach' is to ensure that all anthropogenic sources of salts are controlled such that they do not cause exceedances of water quality objectives. These approaches are consistent with state and federal anti-degradation policies (State Board Resolution No. 68-16 and 40 C.F.R. 131.12). This is an optional special study to be conducted if desired by the stakeholders or determined necessary for establishing a natural sources exclusion by the Executive Officer. ***3. Special Study #3 (Optional) – Develop Site-Specific Objectives*** The TMDL implementation plan provides for actions to protect the agricultural and groundwater recharge beneficial uses in the CCW. As shown in the linkage analysis, some downstream reaches may not achieve the water quality objectives through implementation of this TMDL because of the transport of salts out of the watershed through those reaches. Consequently, an optional special study is included to allow the CCW stakeholders to pursue development of site-specific objectives for salts for reaches upstream of the Hill Canyon WWTP and Simi Valley WQCP (Reaches 7, 8, 12, and 13), Calleguas Creek Reach 3, Revolon Slough (Reach 4) and Beardsley Wash (Reach 5). These alternative numeric water quality objectives would be developed based on the beneficial uses to be protected in a reach and the attainability of the current water quality objectives. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer. ***4. Special Study #4 (Optional) – Develop Site-Specific Objectives for Drought Conditions*** During drought conditions, the load of salts into the watershed increases as a result of increasing concentrations in imported water. Stakeholders in the CCW cannot control the increased mass entering the watershed from the water supply. However, the stakeholders do have the ability to manage the salts within the watershed to protect beneficial uses and export the additional mass of salts out of the watershed.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	If necessary, site-specific objectives may be developed to address situations that result in higher imported water salt concentrations to allow management of the salts and protection of beneficial uses. This special study may be combined with Special Study #3 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. ***5. Special Study #5 (Optional) – Develop Site-Specific Objectives for Sulfate*** Sulfate is a necessary nutrient for plant growth and sulfate containing products are often applied to agriculture as fertilizers and pesticides. Therefore, site-specific objectives may be investigated and developed for sulfate that more accurately protects agricultural supply beneficial uses. Additionally, this study could evaluate whether or not a sulfate balance is necessary to maintain in the watershed. This special study may be combined with Special Study #3 and/or #4 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. **<u>Monitoring Plan</u>** To ensure that the goal of a salts balance in the watershed is being achieved and water quality objectives are being met, a comprehensive method of tracking inputs and outputs to the watershed will be developed. A monitoring plan will be submitted to the RWQCB for Executive Officer approval within six months of the effective date of the CCW Salts TMDL. Monitoring will begin one year after Executive Officer approval of the monitoring plan to allow time for the installation of automated monitoring equipment. ***1. Input Tracking*** Inputs to the watershed are tracked through four mechanisms:1) Information on the import of State Water Project water is readily available and provides information on the mass of salts brought into the watershed; 2) Groundwater pumping records provide information on the mass of salts imported into the watershed from deep aquifer pumping; 3) Import records of water supply form the Santa Clara River can be obtained to determine the mass of salts imported through this source; 4) Monitoring data on imported water quality can be compared to monitoring of effluent quality to estimate the amount of salts added through human use of the water.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***2. Output Tracking and Determining Compliance with Water Quality Objectives*** Outputs from the watershed will be tracked through surface water monitoring at key locations in the watershed and monitoring of discharges to the brine line. Monitoring will include both flow and quality. Compliance with water quality objectives will be determined at key locations where beneficial uses occur in the watershed. The stations used for output tracking will also be used to determine compliance with water quality objectives. The monitoring program will determine if the TMDL compliance points are protective of the beneficial uses for the subwatershed. If the monitoring determines that the compliance points are not protective of beneficial uses, an alternative compliance point will be selected. The Executive Officer may revise the TMDL compliance point based on the result of the monitoring. Additionally, if other places in the watershed are identified where sensitive beneficial uses occur, water quality monitoring stations can be added to determine compliance with water quality objectives. For the RWRMP, three new or upgraded automated flow measuring and sample collection stations will be installed at three points on the stream system to continuously record flow and various water quality parameters during dry weather. Preliminary monitoring locations include Arroyo Conejo in Hill Canyon, Conejo Creek at Baron Brothers Nursery and Calleguas Creek at University Drive. For the NRRWMP, one new or upgraded automated flow measuring and sample collection station will be added downstream of Simi Valley at the point at which groundwater recharge begins. A preliminary monitoring location is at Hitch Blvd. where an existing flow gauging station exists. However, the amount of groundwater recharge upstream of this site will need to be evaluated to determine the exact monitoring location. For Revolon Slough, the existing monitoring station at Wood Road. will be used to monitor quality and flow on Revolon Slough to determine the outputs from the Revolon portion of the Pleasant Valley subwatershed. Additional land use monitoring will be conducted concurrently at representative agricultural and urban runoff discharge sites as well as at POTWs in each of the subwatersheds and analyzed for chloride, TDS, sulfate, and boron. The location of the land use stations will be determined before initiation of the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP). All efforts will be made to include at least two wet weather sampling events during the wet season (October through April) during a targeted storm event. ***3. Reporting and Modification of the Calleguas Creek Watershed TMDL Monitoring Program*** A monitoring report will be prepared annually within six months after completion of the final event of the sampling year. An adaptive management approach to the CCWTMP will be adopted as it may be necessary to modify aspects of the CCWTMP. Results of sampling carried out through the CCWTMP and other programs within the CCW may be used to modify this plan, as appropriate. These modifications will be summarized in the annual report. Possible modifications could include, but are not limited to the, following:

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	▪ The inclusion of additional land use stations to accurately characterize loadings; ▪ The removal of land use stations if it is determined they are duplicative (*i.e.,* a land use site in one subwatershed accurately characterize the land use in other subwatersheds); ▪ The inclusion of additional in-stream sampling stations; and ▪ The elimination of analysis for constituents no longer identified in land use and/or instream samples. If a coordinated and comprehensive monitoring plan is developed and meets the goals of this monitoring plan that plan should be considered as a replacement for the CCWTMP. ***4. Other Monitoring*** Other surface water and groundwater monitoring will be implemented as necessary to assess the impacts of the implementation actions and adjust the activities as necessary to protect beneficial uses and achieve the salts balance. Examples of additional monitoring that may be conducted include: ▪ Monitoring under Phase 2 and 3 of the RWRMP to evaluate the effects of replenishment water releases and groundwater treatment and releases. ▪ Monitoring to assess the impacts of management of the Simi Basin groundwater dewatering wells under Phase 1 of the NRRWMP.
Implementation Plan	The identified implementation actions provided in this TMDL will result in a salt balance in the stream and are expected to result in compliance with the allocations. The implementation plan is comprised of actions that directly impact discharges to the receiving water and actions that will indirectly impact discharges to receiving water. Responsible agencies and jurisdictions shall consider minimum flow requirements that may be imposed by federal or state regulatory agencies when implementing actions to comply with this TMDL. Should the proposed implementation actions not result in compliance with objectives and site-specific objective are not adopted, additional implementation actions may be required to achieve the water quality objectives. Any plans or programs for implementation of the TMDL for the Southern Reaches of the CCW upstream of the Conejo Creek Diversion and the Northern Reaches of the CCW, that would result in significant reduction in instream flow, including but not limited to, an application for Water Reclamation Requirements (WRRs) shall include an analysis of potential impacts to instream beneficial uses that could result from the reclamation of wastewater or extracted groundwater. For Phase 1 of the Southern Reaches of the CCW Renewable Water Resource Management Program (RWRMP), Water Rights Decision 1638 from SWRCB satisfies these requirements and establishes the minimum flow requirements for Conejo and Calleguas Creek downstream of the Conejo Creek Diversion Project.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	Any WRRs shall require that timely written notice be given to the Regional Board, and to any regulatory agency whose instream flow is at issue, if diversion or reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The Executive Officer shall issue an order pursuant to Water Code section 13267, which requires responsible agencies and jurisdictions to file a technical report if reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The order shall require that the technical report identify the causes of the impairments or threatened impairments, and identifies options to abate the conditions. The Regional Board shall reconsider this TMDL if adequate flows to protect instream beneficial uses are not maintained. The implementation actions described in the TMDL represent a range of activities that could be conducted to achieve a salts balance in the watershed. Future considerations may result in other actions being implemented rather than the options presented. However, any proposed actions will be reviewed using the salt balance model to ensure the action does not adversely impact other implementation actions in the watershed or the salt balance of a downstream subwatershed. Currently, the implementation plan is presented in phases with a tentative schedule for each phase. The implementation of projects may occur earlier than planned or begin during an earlier phase. Additionally, many of the implementation actions require the use of the Regional Salinity Management Conveyance (RSMC or brine line). As such, the implementation schedule for those actions will be linked the construction schedule for the RSMC. The implementation plan for the Salts TMDL includes regional and subwatershed specific implementation actions. There are four key structural elements to the regional implementation: Regional Salinity Management Conveyance (RSMC), Water Conservation, Water Softeners, and Best Management Practices for Irrigated Agriculture. Subwatershed implementation includes Renewable Water Resource Management Program (RWRMP) for the Southern Reaches and Northern Reach Renewable Water Management Plan (NRRWMP). Detailed discussion for each implementation element including description of the action, status and schedule for implementing the action, and a summary of the expected contribution to achievement of the salts balance are provided in the Staff Report and Technical Report for this TMDL. Proposed implementation actions in the watershed, responsible agencies, and the estimated completion date based on the effective date of the TMDL are summarized below.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	**Summary of Proposed Implementation Actions**

Action	Responsible Agency/ies	Schedule for Completion
Water Conservation	POTWs, Permitted Stormwater Dischargers, and Other NPDES Permittees	3 years
Water Softeners	POTWs and Permitted Stormwater Dischargers	10 years
Best Management Practice for Agricultural Dischargers	Agricultural Dischargers	2 years
RMSC Phase 1	Calleguas Municipal Water District	2 year
RMSC Phase 2	Calleguas Municipal Water District	5 year
RMSC Phase 3	Calleguas Municipal Water District	10 years
RWRMP Phase 1	CamrosaWater District, Camarillo Sanitation District	3 years
RWRMP Phase 2	Camrosa Water District, City of Thousand Oaks	6 years
RWRMP Phase 3	Camrosa Water District, City of Thousand Oaks	10 years
RWRMP Phase 4	To Be Determined	15 years
NRRWMP Phase 1	Calleguas Municipal Water District, City of Simi Valley, Ventura County Water Work-District No.1	3 years
NRRWMP Phase 2	Calleguas Municipal Water District, Ventura County Water Work-District No.1, City of Camarillo	7 years
NRRWMP Phase 3	City of Camarillo, City of Simi Valley	10 years
NRRWMP Phase 4	To Be Determined	15 years
Final Completion Date		15 years

The sections below provide discussion of the application of the final WLAs for POTWs, specific permitted stormwater discharges, other NPDES dischargers, and agricultural dischargers.

I. POTWs, permitted stormwater discharges, and other NPDES discharges

The final WLAs will be included for permitted stormwater discharges, POTWs, and other NPDES discharges in accordance with the compliance schedules provided in Table 7-22.2. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of this TMDL.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	▪ **POTWs** WLAs established for the POTWs in this TMDL will be implemented through NPDES permit limits. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The proposed permit limits will be applied as end-of-pipe mass-based monthly average effluent limits. Daily maximum effluent limit is not required because chloride is not expected to have an immediate or acute effect on the beneficial uses. Compliance with the minimum salt export requirements for POTWs will be based on the salt export from the subwatershed to which they discharge. The mechanisms for meeting the minimum salt export requirements and for monitoring progress towards meeting those requirements will be included in the monitoring program work plan and approved by the Executive Officer. At the end of each year, the amount of salt exported will be compared to the minimum required salt export. POTW allocations will be reduced using the adjustment factor if both of the following conditions occur: • The annual dry weather salt exports from the subwatershed to which the POTW discharges are below the minimum required exports for the previous year; and • The water quality objectives were exceeded in the receiving water at the base of the subwatershed The POTW allocations will be reduced for the following year by the difference between the minimum required salt export and the actual amount exported. The discharger shall be notified by the Regional Board that the assigned WLAs are reduced and the reduced effluent limits shall be applied for the next year. If the POTW allocations are reduced, the POTW will need to increase the amount of salt export or reduce the mass of salts discharged from the POTW before the end of the following year when the adjustment will be evaluated again. POTWs can only request to adjust the assigned WLAs upwards using the adjustment factor under limited conditions provided below: • Water quality objectives are met in the receiving waters; • Imported water supply chloride concentrations exceed 80 mg/L; and • Discharges from the POTW exceed the allocation.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	When imported water supply chloride concentrations exceed 80 mg/L, the POTW will monitor the effluent to determine if the wasteload allocation is exceeded. If the wasteload allocation is exceeded and the POTW desires an adjustment to the allocation, the POTW will submit documentation of the water supply chloride concentrations, the receiving water chloride concentration, the effluent mass, and the evidence of increased salt exports to offset the increased discharges from the POTW to the Regional Board for approval. The adjustment factor will apply for three months and the POTW must submit the evidence outlined above every three months to keep the adjustment factor active. As long as the required information is submitted, the adjustment factor will be in effect upon notification in writing from the RWQCB. ▪ **Urban Stormwater Discharger** A group mass-based dry weather WLA has been developed for all permitted stormwater discharges, including municipal separate storm sewer systems (MS4s), and general industrial and construction stormwater permits. USEPA regulation allows allocations for NPDES-regulated stormwater discharges from multiple point sources to be expressed as a single categorical WLA when the data and information are insufficient to assign each source or outfall individual WLAs (40 CFR 130). The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. MS4 WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each subwatershed. ▪ **Other NPDES Dischargers** WLAs established for other NPDES permitted dischargers in this TMDL, including minor non-stormwater permittees (other than Camrosa WRP) and general non-stormwater permittees, will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits, and compliance determined through monitoring of final effluent discharge as defined in the NPDES permit.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	**II. Agriculture** Load allocations for salts will be implemented through Conditional Waiver of Discharges from Irrigated Lands (Conditional Waiver Program) adopted by the LARWQCB on November 3, 2005. Compliance with LAs will be measured in-stream at the base of the subwatersheds and will be achieved through the implementation of Best Management Practices (BMPs) consistent with the Conditional Waiver Program. The Conditional Waiver Program requires the development of an agricultural water quality management plan (AWQMP) to address pollutants that are exceeding receiving water quality objectives as a result of agricultural discharges. Therefore, implementation of the load allocations will be through the development of an agricultural management plan for salts. Implementation of the load allocations will also include the coordination of BMPs being implemented under other required programs to ensure salts discharges are considered in the implementation. Additionally, agricultural dischargers will participate in educational seminars on the implementation of BMPs as required under the Conditional Program. Studies are currently being conducted to assess the extent of BMP implementation and provide information on the effectiveness of BMPs for agriculture. This information will be integrated into the AWQMP that will guide the implementation of agricultural BMPs in the Calleguas Creek watershed. After implementation of these actions, compliance with the allocations and TMDL will be evaluated and the allocations reconsidered if necessary based on the special studies and monitoring plan section of the implementation plan. As shown in Table 7-22.2, implementation of LAs will be conducted over a period of time to allow for implementation of the BMPs, as well as coordination with special studies and implementation actions resulting from other TMDL Implementation Plans (Nutrient, Historic Pesticides and PCBs, Sediment, Metals, Bacteria, etc.).

Table 7-22.2 Calleguas Creek Watershed Salts TMDL: Implementation Schedule

Item	Implementation Action	Responsible Party	Completion Date
1	Effective date of interim Salts TMDL waste load allocations (WLAs)	POTWs, Permitted Stormwater Dischargers[1] (PSD), and Other NPDES Permittees	Effective date of the amendment
2	Effective date of interim Salts TMDL load allocations (LAs)	Agricultural Dischargers	Effective date of the amendment
3	Responsible jurisdictions and agencies shall submit compliance monitoring plan to the Los Angeles Regional Board for Executive Officer approval.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	6 months after effective date of the TMDL
4	Responsible jurisdictions and agencies shall begin monitoring as outlined in the approved monitoring plan.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	1 year after monitoring plan approval by Executive Officer
5	Responsible jurisdictions and agencies shall submit workplans for the optional special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	Within 10 years of effective date of the TMDL
6	Responsible jurisdictions and agencies shall submit results of the special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	2 years after workplan approval by Executive Officer
7	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 20%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	3 years after effective date of the TMDL
8	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS and chloride imbalance by 40%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	7 years after effective date of the TMDL
9	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 70%.	POTWs, Permitted Stormwater Dischargers (PSD), Other NPDES Permittees, and Agricultural Dischargers	10 years after effective date of the TMDL
10	The Los Angeles Regional Board shall reconsider this TMDL to re-evaluate numeric targets, WLAs, LAs and the implementation schedule based on the results of the special studies and/or compliance monitoring.	The Regional Board	12 years after effective date of the TMDL
11	Responsible jurisdictions and agencies shall demonstrate that the watershed has achieved an annual boron, sulfate, TDS, and chloride balance.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL
12	The POTWs and non-storm water NPDES permits shall achieve WLAs, which shall be expressed as NPDES mass-based effluent limitation specified in accordance with federal regulations and state policy on water quality control.	POTWs and Other NPDES Permittees	15 years after effective date of the TMDL

Item	Implementation Action	Responsible Party	Completion Date
13	Irrigated agriculture shall achieve LAs, which will be implemented through the Conditional Waiver for Irrigated Lands as mass-based receiving water limits.	Agricultural Dischargers	15 years after effective date of the TMDL
14	The permitted stormwater dischargers shall achieve WLAs, which shall be expressed as NPDES mass-based limits specified in accordance with federal regulations and state policy on water quality control.	Permitted Stormwater Dischargers	15 years after effective date of the TMDL
15	Water quality objectives will be achieved at the base of the subwatersheds designated in the TMDL.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL

1 Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees.

7-23 Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:
The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 8, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-23.1 and the Implementation Plan in Tables 7-23.2a and 7-23.2b.

Table 7-23.1 Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL: Elements

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Problem Statement	Current levels of trash discharges into Lake Elizabeth and Lake Hughes violate water quality objectives and are impairing beneficial uses. Based on trash abatement and cleanup efforts by the local landowner in the vicinity of Munz Lake and site visits by Regional Board staff, current assessment of trash levels indicates that Munz Lake is no longer impaired by trash and the local landowner will provide date to evaluate the feasibility of delisting Munz Lake. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC 1) and non-contact water recreation (REC 2), warm freshwater habitat (WARM), and wildlife habitat (WILD); rare and threatened species (RARE), that is specific for Lake Elizabeth.
Numeric Target (interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Lake Elizabeth, Munz Lake, and Lake Hughes and their shorelines. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Lake Elizabeth, Munz Lake and Lake Hughes and their shorelines.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Lake Elizabeth and Lake Hughes. Point sources such as storm drains are also sources of trash discharged to Lake Elizabeth and Lake Hughes.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the Permitees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including Los Angeles County and local land owners with storm drains that discharge to Lake Elizabeth and Lake Hughes. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the National Forest Service and local land owners. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Lake Elizabeth and Lake Hughes includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Lake Elizabeth and Lake Hughes through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres).

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Lake Elizabeth and Lake Hughes. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria:

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Lake Elizabeth, and Lake Hughes. For Lake Elizabeth and Lake Hughes, the initial minimum frequency shall be set as follows: 1. Once per week on the water, shoreline and the adjacent land areas of Lake Elizabeth and Lake Hughes where they are publicly accessible, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP), during May 15 through October 15. Once per month for areas with limited access. 2. Once per month on the water, shoreline and the adjacent land areas for Lake Elizabeth and Lake Hughes, as defined in the Executive Officer approved TMRP, from October 15 to May 15. 3. Within one week on the water, shoreline and the adjacent land areas of Lake Elizabeth and Lake Hughes after each storm event with one inch of rain or greater, and after each wind advisory. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Program to protect personnel. The MFAC/BMP program shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses . With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-23.2b, below. The County of Los Angeles will act as a third party through the recently enacted County Ordinance to identify private party dischargers in unincorporated County land. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Lake Elizabeth and Lake Hughes and/or within responsible jurisdiction land areas. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Lake Elizabeth and Lake Hughes or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Lake Elizabeth and Lake Hughes and on the land area surrounding Lake Elizabeth and Lake Hughes, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Lake Elizabeth and Lake Hughes.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-23.2a Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL: Implementation Schedule Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the waterbody. Installation will be prioritized based on the greatest point source loadings.

Table 7-23.2b Lake Elizabeth, Munz Lake, and Lake Hughes TMDL:
Implementation Schedule Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/ BMP Program and Trash Monitoring and Reporting Plan.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Six months from TMDL effective date.
3	Implement MFAC/ BMP Program.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-24 Revolon Slough and Beardsley Wash Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:
The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on January 24, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-24.1 and the Implementation Plan in Tables 7-24.2a and 7-24.2b.

Table 7-24.1 Revolon Slough and Beardsley Wash Trash TMDL: Elements

Element	Revolon Slough and Beardsley Wash Trash TMDL
Problem Statement	Current levels of trash discharges into Revolon Slough and Beardsley Wash violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD); wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Revolon Slough and Beardsley Wash, and in the channel. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Revolon Slough and Beardsley Wash, shoreline and channel.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Revolon Slough and Beardsley Wash. Point sources such as storm drains are also sources of trash discharged to Revolon Slough and Beardsley Wash.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the Department of Transportation (Caltrans) Permittees and Co-Permittees of the Ventura County Municipal Separate Storm Sewer System (MS4) Permit, including Ventura County, the Ventura County Watershed Protection District, the City of Camarillo, and the City of Oxnard, and local landowners. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to land owners and agencies in the vicinity of Revolon Slough and Beardsley Wash, including the County of Ventura, Ventura County Watershed Protection District, City of Camarillo, City of Oxnard, and Agricultural entities in the Revolon Slough and Beardsley Wash subwatersheds. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Revolon Slough and Beardsley Wash includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Revolon Slough and Beardsley Wash through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres).

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Revolon Slough and Beardsley Wash. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Revolon Slough and Beardsley Wash. For Revolon Slough and Beardsley Wash, the initial minimum frequency shall be set as follows:

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	1. Monthly on Revolon Slough and its adjacent land areas at Wood Road (the end of the concrete-lined channel), as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Bi-monthly on the water, shoreline and channels of Beardsley Wash and Revolon Slough in areas under the jurisdiction of the County of Ventura, and agricultural lands. 3. Monthly assessment and collection at outlets on north side of Camarillo Hills Drain between Las Posas Rd. and Wood Rd. 4. Monthly on Las Posas Estate Drain between Central Ave. and the 101 Freeway. 5. Monthly at the inlet to the North Ramona Place Drain debris basin. 6. Monthly at inlet to Beardsley Wash at Wright Road and the adjacent land areas, as defined in the Executive Officer approved TMRP. 7. Monthly on a rotating basis of the following channels from the City of Oxnard (i.e. one drain cleaned per month): a. Fifth Street Drain from Del Norte Blvd. to Revolon Slough b. Sturgis Drain from Oxnard City Limits to Revolon Slough c. Nyeland Drain from Center Drive to Friedrich Rd. d. Del Norte Drain from Del Norte Blvd. to Revolon Slough 8. All Drains listed above will also be cleaned within one week of every storm event greater than 1 inch of rain. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. Compliance for Agricultural Sources For agricultural dischargers, the Conditional Waiver for Irrigated Lands will be revised to include a MFAC/BMP program for enrollees in the Revolon Slough and Beardsley Wash subwatershed. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements, an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-24.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Revolon Slough and Beardsley Wash and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Revolon Slough and Beardsley Wash or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Revolon Slough and Beardsley Wash and on the land area surrounding Revolon Slough and Beardsley Wash, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Monitoring and Reporting Plan (continued)	The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Revolon Slough and Beardsley Wash.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-24.2a Revolon Slough and Beardsley Wash Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Revolon Slough and Beardsley Wash. Installation will be prioritized based on the greatest point source loadings.

Table 7-24.2b Revolon Slough and Beardsley Wash Trash TMDL:
Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Six months from TMDL effective date.
3	Implement MFAC/BMP Program.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/ BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-25 Ventura River Estuary Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 11, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-25.1 and the Implementation Plan in Tables 7-25.2a and 7-25.2b.

Table 7-25.1 Ventura River Estuary Trash TMDL: Elements

Element	Ventura River Estuary Trash TMDL
Problem Statement	Current levels of trash discharges into the Ventura River Estuary violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: navigation (NAV), contact recreation (REC 1) and non-contact recreation (REC 2), commercial and sport fishing (COMM), warm fresh water habitat (WARM), estuarine habitat (EST), marine habitat (MAR), wildlife habitat (WILD), rare, threatened or endangered species (RARE), migration of aquatic organisms (MIGR), spawning, reproduction, and/or early development (SPWN), shellfish harvesting (SHELL), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in the Ventura River Estuary, shoreline and in the channel. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into the Ventura River Estuary, shoreline, and channel.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to the Ventura River Estuary. Point sources such as storm drains are also sources of trash discharged to the Ventura River Estuary.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the City of Ventura, County of Ventura, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans with conveyances that discharge to the Ventura River Estuary. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Ventura River Estuary Trash TMDL
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for the Ventura River Estuary includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to the Ventura River Estuary through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to the estuary.

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water, shoreline, and the channel. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to the Ventura River Estuary. For the Ventura River Estuary, the initial minimum frequency shall be set as follows:

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	1. Once per week for the sandy beach area between the estuary and the ocean and along the bike path between May 15 and October 15. Once per month for the rest of the year. 2. Within one week after each storm event with one inch of rain or greater at the Front Street storm drain, which discharges under the eastern levee, 50-feet north of the railroad tracks. 3. Quarterly for other areas of the estuary below the U.S. 101 Freeway. 4. After major public events that occur in the Ventura County Fairground that charge an admission price and are attended by greater than 7,000 people. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. *Compliance for Agricultural Sources* For agricultural dischargers, the Conditional Waiver for Irrigated Lands will be revised to include a MFAC/BMP program for enrollees in the Ventura River Estuary subwatershed. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver:

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	(a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-25.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Ventura River Estuary Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in the Ventura River Estuary and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of the Ventura River Estuary or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the estuary and on the land area surrounding the estuary, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for the Ventura River Estuary.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service, and the period from May 15 to October 15, or during and after public events that occur in the Ventura County Fairground.

Table 7-25.2a Ventura River Estuary Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of “major rain event”.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the estuary. Installation will be prioritized based on the greatest point source loadings.

Table 7-25.2b Ventura River Estuary Trash TMDL: Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Six months from TMDL effective date.
3	Implement MFAC/BMP Program.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/ BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-26 Machado Lake Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 8, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-26.1 and the Implementation Plan in Tables 7-26.2a and 7-26.2b.

Table 7-26.1 Machado Lake Trash TMDL: Elements

Element	Machado Lake Trash TMDL
Problem Statement	Current levels of trash discharges into Machado Lake violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: municipal and domestic supply (MUN); contact water recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); wildlife habitat (WILD), rare, threatened, or endangered species (RARE), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Machado Lake, and on the shoreline. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Machado Lake and on the shoreline.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Machado Lake. Point sources such as storm drains are also sources of trash discharged to Machado Lake.
Loading Capacity	Zero, as defined in the Numeric Target.

Element	Machado Lake Trash TMDL
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation (Caltrans) and permittees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including Los Angeles County, Los Angeles Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the City of Los Angeles. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Machado Lake includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Machado Lake through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances, (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs).

Element	Machado Lake Trash TMDL
Implementation (continued)	1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Machado Lake. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through an MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented.

Element	Machado Lake Trash TMDL
Implementation (continued)	1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Machado Lake. For Machado Lake, the initial minimum frequency shall be set as follows: 1. Five days per week on the shoreline and in the Ken Malloy Harbor Regional Park, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Twice per week on waters of Machado Lake. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited.

Element	Machado Lake Trash TMDL
Implementation (continued)	The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-26.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Machado Lake Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Machado Lake and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Machado Lake or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Machado Lake and on the land area surrounding Machado Lake, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Machado Lake.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service, and the period from May 15 to October 15.

Table 7-26.2a Machado Lake Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Machado Lake. Installation will be prioritized based on the greatest point source loadings.

Table 7-26.2b Machado Lake Trash TMDL: Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Los Angeles	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	City of Los Angeles	Six months from TMDL effective date.
3	Implement MFAC/BMP Program.	City of Los Angeles	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Los Angeles	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-27 Legg Lake Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:
The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 5, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-27.1 and the Implementation Plan in Tables 7-27.2a and 7-27.2b.

Table 7-27.1 Legg Lake Trash TMDL: Elements

Element	Legg Lake Trash TMDL
Problem Statement	Current levels of trash discharges into Legg Lake violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC 1) and non-contact water recreation (REC 2), warm freshwater habitat (WARM), cold freshwater (COLD), wildlife habitat (WILD), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Legg Lake and its shoreline. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Legg Lake and its shoreline.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Legg Lake. Point sources such as storm drains are also sources of trash discharged to Legg Lake.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation, and permittees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including the Los Angeles County Flood Control District, the County of Los Angeles, and the Cities of El Monte and South El Monte. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the County of Los Angeles. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.

Element	Legg Lake Trash TMDL
Implementation	Implementation of the trash TMDL for Legg Lake includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Legg Lake through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Legg Lake.

Element	Legg Lake Trash TMDL
Implementation (continued)	Irrespective of whether point source dischargers employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing an MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Legg Lake. For Legg Lake, the initial minimum frequency shall be set as follows: 1. Five days per week on the shoreline and in the Whittier Narrows Recreation Park Area, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Once per week on waters of Legg Lake.

Element	Legg Lake Trash TMDL
Implementation (continued)	b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Program to protect personnel. The MFAC/BMP program shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses . With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency.

Element	Legg Lake Trash TMDL
Implementation (continued)	Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-27.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Legg Lake and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Legg Lake or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Legg Lake and on the land area surrounding Legg Lake, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Legg Lake.

Element	Legg Lake Trash TMDL
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-27.2a Legg Lake Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the waterbody. Installation will be prioritized based on the greatest point source loadings.

Table 7-27.2b Legg Lake TMDL: Implementation Schedule -
Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	Los Angeles County, City of South El Monte, City of El Monte.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/ BMP Program and Trash Monitoring and Reporting Plan.	Los Angeles County, City of South El Monte, City of El Monte.	Six months from TMDL effective date.
3	Implement MFAC/ BMP Program.	Los Angeles County, City of South El Monte, City of El Monte.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	Los Angeles County, City of South El Monte, City of El Monte.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-28 Harbor Beaches of Ventura County Bacteria TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on November 1, 2007.

This TMDL was approved by:
The State Water Resources Control Board on October 7, 2008.
The Office of Administrative Law on December 9, 2008.
The U.S. Environmental Protection Agency on December 18, 2008.

The effective date of this TMDL is: December 18, 2008.

The following table includes the elements of this TMDL.

Table 7-28.1. Harbor Beaches of Ventura County Bacteria TMDL: Elements

Element	Findings and Regulatory Provisions
Problem Statement	Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Kiddie Beach and Hobie Beach. Kiddie and Hobie Beach are referenced in the Staff Report as the Harbor Beaches of Ventura County. Swimming in marine waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. Bacteriological objectives are set forth in Chapter 3 of the Basin Plan. The objectives are based on four bacteria indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: 1. Rolling 30-day Geometric Mean Limits a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. 2. Single Sample Limits a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate allocations) (continued)	These objectives are based on health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the United States Environmental Protection Agency (USEPA, 1986). For the Harbor Beaches of Ventura County, the targets will apply at existing monitoring sites, with samples taken at ankle to knee-high depths. These targets apply during both dry- and wet-weather. This TMDL uses a "reference system/anti-degradation approach" which means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within the Los Angles Region, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the bacteriological objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric mean will be calculated on each sample day. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)
Source Analysis	Bacteria sources in the Harbor Beaches of Ventura County include anthropogenic and non-anthropogenic sources and point and non-point sources. Each of these sources contributes to the elevated levels of bacteria indicator densities at the Harbor Beaches of Ventura County during dry- and wet-weather. As of December 2006, there are four active, National Pollutant Discharge Elimination System (NPDES) permits or Waste Discharge Requirements (WDRs) for discharges to Channel Islands Harbor or Edison Canal. Discharges from the Statewide MS4 Permit for the California Department of Transportation (Caltrans) are a potentially significant source of bacteria loading. Discharges from general NPDES permits, individual NPDES permits, WDRs, the Statewide Industrial Storm Water General Permit, and the Statewide Construction Activity Storm Water General Permit are not expected to be a significant source of bacteria.

Element	Findings and Regulatory Provisions
Source Analysis (continued)	While a source identification study conducted at the Channel Islands Harbor indicated that local non-point sources are the majority contributor in summer dry-weather, high bacteria densities and exceedances during wet-weather may be more indicative of urban and agricultural run-off. Potential non-point sources of bacteria contamination at the Harbor Beaches of Ventura County include: marina activities such as waste disposal from boats, boat deck and slip washing, swimmer "wash-off", and restaurant washouts; natural sources including birds, waterfowl, and feral cat; and agricultural sources.
Loading Capacity	Loading capacity for the Harbor Beaches of Ventura County is defined in terms of bacteria indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets shall be met at the specific sampling locations, which are representative of the corresponding beaches, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations (WLAs) are expressed as allowable exceedance days. The allowable number of exceedance days for a monitoring site for each time period is based on the more stringent of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each beach, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. Summer dry-weather (April 1 to October 31) 2. Winter dry-weather (November 1 to March 31) 3. Wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event) For the Channel Islands Harbor Beaches, the County of Ventura, the Ventura County Watershed Protection District (VCWPD) and associated Municipal Separate Storm Sewer System (MS4) permittees in the Channel Islands Harbor subwatershed, the City of Oxnard, and Caltrans are assigned WLAs. All WLAs for summer dry-weather single sample bacteria densities at the Harbor Beaches of Ventura County are zero (0) days of allowable exceedances.

Element	Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The WLA for the rolling 30-day geometric mean during any time period or monitoring site at the Harbor Beaches of Ventura County is zero (0) days of allowable exceedances. The WLA for winter dry-weather and wet-weather single sample bacteria densities for Kiddie Beach and Hobie Beach are listed in Table 7-28.2. General NPDES permits, individual NPDES permits, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR permittees in the Channel Islands Harbor subwatershed are assigned WLAs of zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, individual NPDES permit, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR will also be subject to a WLA of zero (0) days of allowable exceedances. The Harbor Beaches of Ventura County are assigned interim WLAs upon the effective date of the TMDL. Interim WLAs for single sample and the 30-day rolling geometric mean are expressed in terms of an exceedance day and listed below. **Single Sample Exceedances:**

Summer Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	54	8
Hobie Beach	40	6

Winter Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	23	4
Hobie Beach	25	4

Wet-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	32	5
Hobie Beach	38	6

<table>
<tr><th>Element</th><th>Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations
(for point sources)
(continued)</td><td>30-day Rolling Geometric Mean Exceedances:

Summer Weather
<table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>55</td><td>8</td></tr><tr><td>Hobie Beach</td><td>80</td><td>12</td></tr></table>
Winter Weather
<table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>92</td><td>14</td></tr><tr><td>Hobie Beach</td><td>91</td><td>13</td></tr></table></td></tr>
<tr><td>Load Allocations
(for non-point sources)</td><td>Load allocations (LAs) are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site.

For the Channel Islands Harbor Beaches, the County of Ventura and the City of Oxnard are assigned LAs. LAs may be assigned to agricultural lands in the Channel Islands Harbor subwatershed during Regional Board Reconsideration based on monitoring data from the Conditional Waiver for Dischargers from Irrigated Lands.

All LAs for summer dry-weather, single sample bacteria densities at the Harbor Beaches of Ventura County are zero (0) days of allowable exceedances. The LA for winter dry-weather and wet-weather single sample bacteria densities for Kiddie Beach and Hobie Beach are listed in Table 7-28.2.

The LA for the rolling 30-day geometric mean during any time period or monitoring site at the Harbor Beaches of Ventura County is zero (0) days of allowable exceedances.

The Harbor Beaches of Ventura County are assigned interim LAs upon the effective date of the TMDL. Interim LAs for single sample and the 30-day rolling geometric mean are expressed in terms of an exceedance day and listed below.</td></tr>
</table>

Element	Findings and Regulatory Provisions
Load Allocations (for non-point sources) (continued)	**Single Sample Exceedances:** Summer Dry-Weather <table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>54</td><td>8</td></tr><tr><td>Hobie Beach</td><td>40</td><td>6</td></tr></table> Winter Dry-Weather <table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>23</td><td>4</td></tr><tr><td>Hobie Beach</td><td>25</td><td>4</td></tr></table> Wet-Weather <table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>32</td><td>5</td></tr><tr><td>Hobie Beach</td><td>38</td><td>6</td></tr></table> **30-day Rolling Geometric Mean Exceedances:** Summer Weather <table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>55</td><td>8</td></tr><tr><td>Hobie Beach</td><td>80</td><td>12</td></tr></table> Winter Weather <table><tr><td>Location</td><td>Daily Sampling</td><td>Weekly Sampling</td></tr><tr><td>Kiddie Beach</td><td>92</td><td>14</td></tr><tr><td>Hobie Beach</td><td>91</td><td>13</td></tr></table>
Implementation	The regulatory mechanisms used to implement the TMDL will include general NPDES permits, individual NPDES permits, WDRs, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, the Conditional Waiver for Dischargers from Irrigated Lands, the Statewide MS4 Permit for Caltrans, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit, assigned a WLA, shall be reopened or amended when the permit is reissued, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. LAs for non-point sources will be implemented within the context of this TMDL.

Element	Findings and Regulatory Provisions
Implementation (continued)	This TMDL will be implemented in accordance with the implementation schedule for the Harbor Beaches of Ventura County. The compliance and implementation schedules are detailed in Table 7-28.3. Responsible parties are not specifically required to conduct pilot projects for Best Management Practices (BMPs), though conducting pilot projects is within their discretion. The Regional Board recognizes the long duration required to conduct a pilot project. As such, time is allocated in the implementation schedule for the option of piloting structural BMPs, which include but are not limited to enhanced circulation devices. Special studies are not required for implementation of the TMDL, though conducting special studies is within the discretion of the responsible parties. The Regional Board shall reconsider this TMDL four years after the effective date of the TMDL for the Harbor Beaches of Ventura County to re-evaluate WLAs and LAs based on monitoring data; to re-evaluate allowable exceedance levels, including whether the allowable number of exceedance days maybe adjusted based on a Ventura County rainfall record; to re-evaluate the selection of the reference beach if additional, appropriate reference beach options have been developed; to consider a natural source exclusion approach, subject to the antidegradation policy, if it can be demonstrated that such an approach is warranted by demonstration of the control of all anthropogenic sources of bacteria to the beaches, and demonstration that beneficial uses are being met; and to assign LAs to agricultural lands in the Chanel Islands Harbor subwatershed based on monitoring in the Conditional Waiver for Dischargers from Irrigated Lands. Five years after the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits, in excess of the allowable exceedances listed in Table 7-28.2, at any monitoring location at the Harbor Beaches of Ventura County during summer dry-weather, winter dry-weather, and the rolling 30-day geometric mean targets shall be achieved. Ten years after the effective date of the TMDL there shall be no allowable exceedances of the single sample limits, in excess of the allowable exceedances listed in Table 7-28.2, at any monitoring location during dry-weather or wet-weather at the Harbor Beaches of Ventura County, and the rolling 30-day geometric mean targets shall be achieved.

Element	Findings and Regulatory Provisions
Margin of Safety	An implicit margin of safety is included through several conservative assumptions, such as the assumption that no dilution takes place between the on-shore sources and where the effluent initially mixes with the receiving water, and that bacteria degradation rates are not sufficient to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations for dry- and wet-weather. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List concludes that there are water quality impairments using a binomial distribution method which lists waterbodies when the exceedances are between approximately 8 and 10 percent.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for summer dry-weather, winter dry-weather, and wet-weather based on public health concerns and observed natural background levels of exceedance of bacteria indicators. Historic monitoring data for the Harbor Beaches of Ventura County and the reference beach indicate that the critical condition for bacteria loading is during wet-weather due to greater exceedance probabilities of the single sample bacteria objectives then during dry-weather. To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-28.2, the 90th percentile 'storm year'[1] in terms of wet days[2] is used as the reference year for the reference system. Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. Selecting the 90th percentile year is a more conservative approach that will accommodate a 'worst-case' scenario resulting in fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, there may be more than the allowable number of exceedance days.
Compliance Monitoring	Compliance and monitoring for Harbor Beaches of Ventura County is based on existing monitoring protocols and locations. Monitoring shall continue at sampling locations (VCEHD 36000 and VCEHD 37000) and at the current weekly monitoring frequency, consistent with AB411 compliance monitoring. Monitoring shall be conducted on a year-round basis at the current monitoring locations including the summer months (i.e., April to October) and winter months (i.e., November to March). Bacteria sampling shall be conducted in ankle- to knee-high water, consistent with AB411. However, if additional monitoring stations are added or if changes are made to the sampling frequencies or existing monitoring locations, then submittal of a monitoring plan is required for Executive Officer approval.

Element	Findings and Regulatory Provisions
Compliance Monitoring (continued)	For agricultural dischargers, the Conditional Waiver for Dischargers from Irrigated Lands shall be revised to include monitoring for enrollees in the Channel Islands Harbor subwatershed.

1 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

2 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

Table 7-28.2. Harbor Beaches of Ventura County Bacteria TMDL: Final Allowable Exceedance Days by Location

Location	Summer dry-weather*		Compliance Deadline	Winter dry-weather		Compliance Deadline	Wet-weather**		Compliance Deadline
	Daily sampling (No. days)	Weekly sampling (No. days)		Daily sampling (No. days)	Weekly sampling (No. days)		Daily sampling (No. days)	Weekly sampling (No. days)	
Hobie Beach	0	0	Five years after effective date of the TMDL	3	1	Five years after effective date of the TMDL	17	3	Ten years after effective date of the TMDL
Kiddie Beach	0	0	Five years after effective date of the TMDL	3	1	Five years after effective date of the TMDL	17	3	Ten years after effective date of the TMDL

*A dry day is defined as a non-wet day.
**A wet day is defined as a day with 0.1-inch or more of rain and the three days following the rain event.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Compliance (WLAs): There shall be no exceedances of the interim WLAs (see the WLAs section in Table 7-28.1).	1. County of Ventura 2. Ventura County Watershed Protection District (VCWPD) and associated MS4 Co-permittees in the Channel Islands Harbor (CIH) subwatershed[3] 3. City of Oxnard 4. Caltrans	Effective date of the TMDL.
Compliance (LAs): There shall be no exceedances of the interim LAs (see the LAs section in Table 7-28.1).	1. County of Ventura 2. City of Oxnard	Effective date of the TMDL.
Monitoring: Continue monitoring at stations VCEHD 36000 and VCEHD 37000, at a weekly monitoring frequency, and on a year-round basis. Extend the monitoring period for Hobie Beach to include winter months.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Effective date of the TMDL.
Monitoring[4]: Submit a monitoring plan for the Harbor Beaches of Ventura County (HBVC) for approval by the Executive Officer.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Prior to the modification of existing monitoring locations or frequencies.
Implementation: Submit draft work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during dry-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Six months after the effective date of the TMDL.
Monitoring: Submit monitoring plan for agricultural discharges into the Channel Islands Harbor subwatershed for approval by the Executive Officer.	1. Agricultural Dischargers	One year after the effective date of the TMDL.
Monitoring: Monitor agricultural discharges at the frequency and monitoring locations approved by the Executive Officer in the monitoring plan.	1. Agricultural Dischargers	Six months after Executive Officer approval of the monitoring plan for agricultural discharges.
Pilot Project: Submit a work plan piloting Structural BMPs, including but not limited to enhanced circulation devices, for Executive Officer approval (optional).	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	One year and six months after the effective date of the TMDL.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Implementation: Submit draft work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during wet-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	One year and six months after the effective date of the TMDL.
Pilot Project: Completion of Structural BMP pilot projects, including but not limited to enhanced circulation devices (optional).	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Two years and six months after the effective date of the TMDL.
Implementation: Submit final work plan; to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during dry-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Three years and six months after the effective date of the TMDL.
Regional Board Reconsideration: a. Re-evaluate WLAs and LAs based on data. b. Re-evaluate the implementation schedule based on results from pilot projects. c. Re-evaluate allowable exceedance levels, including whether the allowable number of exceedance days maybe adjusted based on a Ventura County rainfall record. d. Re-evaluate the selection of the reference beach if additional, appropriate reference beach options have been developed and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the ‘natural sources exclusion’ approach subject to antidegradation policies rather than the ‘reference system/antidegradation’ approach. e. Assign LAs to agricultural lands in the Channel Islands Harbor subwatershed based on monitoring in the Conditional Waiver for Dischargers from Irrigated Lands.	Regional Board	Four years after effective date of the TMDL.
Implementation: Submit final work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during wet-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Four years after the effective date of the TMDL.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Compliance (WLAs): There shall be no exceedances in excess of the numbers in Table 7-28.2 of the single sample limits at any location during dry-weather, and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Five years after the effective date of the TMDL.
Compliance (LAs): There shall be no exceedances in excess of the numbers in Table 7-28.2 of the single sample limits at any location during dry-weather, and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. City of Oxnard	Five years after the effective date of the TMDL.
Compliance: Submit Compliance Report for Executive Officer approval. The Compliance Report shall include an evaluation of compliance with dry-weather allocations, interim wet-weather allocations, and rolling 30-day geometric mean targets.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Six and Eight years after the effective date of the TMDL.
Compliance: Submit Final Compliance Report for Executive Officer approval. The Compliance Report shall include an evaluation of compliance with dry-weather allocations, wet-weather allocations, and the rolling 30-day geometric mean targets.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Ten years after the effective date of the TMDL.
Final Compliance (WLAs): There shall be no allowable exceedances of single sample limits in excess of the numbers listed in Table 7-28.2 of the single sample limits at any location during any periods and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Ten years after the effective date of the TMDL.
Final Compliance (LAs): There shall be no allowable exceedances of single sample limits in excess of the numbers listed in Table 7-28.2 of the single sample limits at any location during any periods and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. City of Oxnard	Ten years after the effective date of the TMDL.

3 Co-permittees of Municipal Separate Storm Sewer System (MS4) permit for Channel Islands Harbor subwatershed include the County of Ventura and incorporated cities therein. The incorporated cities for Channel Islands Harbor subwatershed include the City of Oxnard.

4 Submittal of a monitoring plan is required if additional monitoring stations are added or if changes are made to the sampling frequencies or existing monitoring locations (VCEHD 36000 and VCEHD 37000).

7-29 Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on May 1, 2008**.**

This TMDL was approved by:

The State Water Resources Control Board on December 2, 2008.
The Office of Administrative Law on February 19, 2009.
The U.S. Environmental Protection Agency on March 11, 2009.

The effective date of this TMDL is: March 11, 2009.

The elements of the TMDL are presented in Table 7-29.1 and the Implementation Plan in Table 7-29.2

Table 7-29.1. Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	Excessive loadings of nutrients, in particular nitrogen (including ammonia) and phosphorus, cause eutrophic effects, including algae and odors, which impair the beneficial uses of Machado Lake. The nutrient enrichment results in high algal productivity; algal blooms have been observed in the lake during summer months. In addition, high nutrient concentrations contribute to excessive and nuisance macrophyte growth. Algae respiration and decay depletes oxygen from the water column creating an adverse aquatic environment. Machado Lake was placed on the Clean Water Act 303(d) list of impaired waterbodies in 1998, 2002, and 2006 for ammonia, algae, odors, and eutrophic. Applicable Water Quality Objectives for this TMDL are narrative objectives for Biostimulatory Substances and Taste and Odor; and numeric objectives for Dissolved Oxygen and Ammonia. The beneficial uses of Machado Lake include beneficial uses associated with recreation (REC 1 and REC 2), aquatic life (WARM, WILD, RARE, and WET) and water supply (MUN). This TMDL addresses the eutrophic, algae, ammonia, and odor listings which impair these uses.

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Numeric Targets</td><td>The total phosphorus target for Machado Lake is 0.1 mg/L as a monthly average concentration in the water column, which is based upon US EPA Nutrient Criteria Technical Guidance Manual for Lakes and Reservoirs. A ratio of total nitrogen to total phosphorus of 10 is the basis for the total nitrogen (TKN + NO_3-N + NO_2 –N) numeric target of 1.0 mg/L as a monthly average concentration in the water column. The total nitrogen target incorporates all forms of nitrogen including TKN, which is the sum of organic nitrogen and ammonia nitrogen, nitrate nitrogen (NO_3-N), and nitrite nitrogen (NO_2-N). The total nitrogen target expressed as a monthly average is protective of chronic aquatic life exposure for ammonia. There is a separate numeric target for ammonia of 5.95 mg/L as an hourly average to be protective of acute aquatic life exposure. The chlorophyll a target is 20 ug/L based on EPA guidance and the Carlson Trophic Status Index. The dissolved oxygen target is a single sample concentration of no less than 5 mg/L measured at 0.3 meter above the sediments based on the Basin Plan objective. The following table provides the numeric targets for the Machado Lake TMDL.

<table>
<tr><th>Indicator</th><th>Numeric Target</th></tr>
<tr><td>Total Phosphorus</td><td>0.1 mg/L monthly average</td></tr>
<tr><td>Total Nitrogen
(TKN + NO_3-N + NO_2 –N)</td><td>1.0 mg/L monthly average</td></tr>
<tr><td>Ammonia - N</td><td>5.95 mg/L one-hour average</td></tr>
<tr><td>Ammonia - N</td><td>2.15 mg/L 30 day average</td></tr>
<tr><td>Dissolved Oxygen</td><td>5 mg/L single sample minimum measured 0.3 meter above the sediments.</td></tr>
<tr><td>Chlorophyll a</td><td>20 μg/L monthly average</td></tr>
</table>
</td></tr>
<tr><td>Source Analysis</td><td>The point sources of nutrients into Machado Lake are stormwater discharges from the municipal separate storm sewer system (MS4), California Department of Transportation (Caltrans), and general construction and industrial discharges. Stormwater discharges to Machado Lake occur through the following subdrainage systems: Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake. Discharges from Walteria Lake and Drain 553 are tributary to the Wilmington Drain, which then directly discharges in the northern portion of Machado Lake. Approximately, 88 % of the discharge into the lake enters through the Wilmington Drain.

The major nonpoint source of nutrients to Machado Lake is internal nutrient loading (nutrient flux from sediments). Atmospheric deposition is also a nonpoint source of total nitrogen. Nutrient loads from wind resuspension, bioturbation, birds, and general surface runoff are minor sources. Special studies may be conducted to further evaluate sources.</td></tr>
</table>

TMDL Element	Regulatory Provisions
Linkage Analysis	The linkage analysis focuses on the relationship between the nutrient loading to the lake and the numeric targets established to measure attainment of beneficial uses. The Nutrient Numeric Endpoints BATHTUB Spreadsheet Model, which was developed by Tetra Tech for US EPA, was used to establish the linkage between nutrient loading to Machado Lake and the predicted water quality response. The model performs water and nutrient balance calculations under steady-state conditions. Eutrophication related water quality conditions are expressed in terms of total phosphorus, ortho-phosphourus, total nitrogen, inorganic nitrogen, chlorophyll a, transparency (Secchi depth), and hypolimnetic oxygen depletion rates. The linkage analysis demonstrates that assigning waste load and load allocations for total nitrogen and total phosphorus will address eutrophication related water quality conditions.
Waste Load Allocations	Waste load allocations are assigned to urban stormwater dischargers (MS4, Caltrans, general construction and general industrial) in both wet and dry weather. The final waste load allocations are assigned as concentration based allocations of 0.1 mg/L and 1.0 mg/L as monthly averages for total phosphorus and total nitrogen (TKN + NO_3-N + NO_2 –N), respectively. Interim WLAs are based on current in-lake concentrations. The effective date interim total nitrogen and total phosphorus waste load allocations are set as the 95th percentile of current concentrations in the lake. The 5 year interim total nitrogen WLAs are established as a 30 percent reduction from current in-lake concentrations. Concentration-based interim and final WLAs will be included in stormwater permits in accordance with NPDES guidance and requirements. The tables below present the interim and final waste load allocations for the stormwater discharges.

Waste Load Allocations	Total Phosphorus	Total Nitrogen (TKN + NO_3-N + NO_2-N)
	Final WLA (mg/L)	**Final WLA (mg/L)**
MS4 Permittees[1] Caltrans, General Construction and Industrial stormwater permits	0.1	1.0

[1] Municipal Separate Storm Sewer System (MS4) Permittees that are responsible for discharges to Machado Lake include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

TMDL Element	Regulatory Provisions
Waste Load Allocations (continued)	(see table below)

Waste Load Allocations	Years After Effective Date	Interim Total Phosphorus WLAs (mg/L)	Interim Total Nitrogen (TKN + NO3-N + NO2-N) WLAs (mg/L)
MS4 Permittees, Caltrans, General Construction and Industrial Stormwater permits	At Effective Date[1]	1.25	3.50
	5[2]	1.25	2.45
	9.5 (Final WLAs[3])	0.10	1.00

[1] The compliance point for all effective date interim WLAs is measured in the lake.
[2] The compliance point for all year 5 interim WLAs is measured as specified in Implementation Plan Section II of Table 7-29.1
[3] The compliance point for all final WLAs is measured as specified in Implementation Plan Section II of Table 7-29-.1

Load Allocations

Load allocations are assigned for nonpoint source discharges to the lake, primarily internal loading from the lake. The final load allocations for internal loading are concentration based allocations of 0.1 mg/L and 1.0 mg/L as monthly averages for total phosphorus and total nitrogen (TKN + NO_3-N + NO_2 –N), respectively. Concentration based load allocations are appropriate and can be evaluated by monitoring the nutrient concentrations in the water column.

Interim LAs are based on current in-lake concentrations. The effective date interim total nitrogen and phosphorus load allocations are set at the 95th percentile of current concentrations in the lake. The 5 year interim total nitrogen LAs are established as a 30 percent reduction from current in-lake concentrations. The tables below present the final and interim load allocations for the nonpoint sources.

Load Allocations	Total Phosphorus	Total Nitrogen (TKN + NO_3-N + NO_2-N)
	Final LA (mg/L)	**Final LA (mg/L)**
Internal Nutrient Load (City of Los Angeles Department of Recreation and Parks)	0.1	1.0

Load Allocations	Years After Effective Date	Interim Total Phosphorus LAs (mg/L)	Interim Total Nitrogen (TKN + NO3-N + NO2-N) LAs (mg/L)
Internal Nutrient Load (City of Los Angeles Department of Recreation and Parks)	At Effective Date	1.25	3.50
	5	1.25	2.45
	9.5 (Final LAs)	0.10	1.00

TMDL Element	Regulatory Provisions
Margin of Safety	The uncertainties associated with this TMDL are due to limited data from the stormdrains entering the lake and the inherent seasonal and annual variability in delivery of phosphorus and nitrogen for external sources and nutrient cycling within the lake. To address these uncertainties, conservative numeric targets were selected by establishing the targets under a critical lake volume. Likewise, the waste load and load allocations are based on a constant value for internal loading. Moreover, the lake conditions under which the load capacity was developed were based on dry weather critical conditions when the lake level is reduced and therefore loading capacity is reduced. These conservative approaches provide an implicit margin of safety.
Seasonal Variations and Critical Conditions	The external nutrient loading to Machado Lake generally occurs during winter and spring months, in conjunction with storm events. During the dry season the lake receives minimal external loading. In the summer there is the release of nutrients from the sediments. At the same time there is very little water inflow and a decreased lake level due to evaporation. These seasonal variations cause increased nutrient concentrations. Moreover, the reduced lake volume during the summer months provides less assimilative capacity. The critical condition for the attainment of beneficial uses at Machado Lake occurs during the summer months. Also, the critical conditions for dissolved oxygen impairments related to algae growth are during the warm dry summer months when algal respiration is highest. The Machado Lake nutrient TMDL accounts for seasonal and critical conditions of the summer months by assigning a load allocation to the lake sediments and requiring a reduction in this source of nutrients to the lake, and by assigning WLAs to urban stormwater dischargers year-round.
Special Studies and Monitoring Plan	**<u>Special Studies</u>** Additional monitoring and special studies may be undertaken by dischargers and responsible agencies to evaluate the uncertainties and assumptions made in the development of this TMDL. (The results of special studies may be used to reevaluate waste load allocations and load allocations when the Machado Lake Nutrient TMDL is reconsidered.) ***Optional Study #1:*** Core flux study to estimate the nutrient flux from sediments under equilibrium conditions. Results from this study would be beneficial to gauge the success of implementation measures such as aeration. ***Optional Study #2:*** A study to understand factors such as nitrogen and phosphorus sedimentation rates (particulate settling velocities), the overall lake sedimentation rate, and sediment resuspension rate. These factors would be important for a Machado Lake nutrient budget and gauging the potential need for periodic hydraulic dredging.

TMDL Element	Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***Optional Study #3***: A work plan for permittees to assess compliance with TMDL WLAs on a mass basis for total nitrogen and total phosphorous. The work plan should detail testing methodologies, BMPs, and treatments to be implemented to attain and demonstrate a reduction of total nitrogen and phosphorous loading on a mass basis. A final report including the results shall be submitted to the Regional Board for Executive Officer approval. Additional special studies proposed by stakeholders are optional and will be considered at the 7.5 year TMDL reconsideration. All proposed special study work plans and documents shall be submitted to the Regional Board for Executive Officer approval prior to special studies being initiated. **<u>Monitoring Plan</u>** A Monitoring and Reporting Program (MRP) plan to assess compliance with LAs and WLAs measured in lake must be submitted to the Executive Officer for approval within one year of the effective date. Monitoring will begin 60 days after the Executive Officer has approved the monitoring plan. This MRP plan will be required as part of the Lake Water Quality Management Plan as discussed in the Implementation Section. The MRP plan will be designed to monitor and implement this TMDL. The monitoring plan is required to measure the progress of pollutant load reductions and improvements in water quality. The monitoring plan shall ▪ Determine attainment of total phosphorus, total nitrogen, ammonia, dissolved oxygen, and chlorophyll *a* numeric targets. ▪ Determine compliance with the waste load and load allocations for total phosphorus, and total nitrogen. ▪ Monitor the effect of implementation actions on lake water quality Responsible jurisdictions shall be required to begin monitoring sixty days after the Executive Officer approves the MRP. Field samples and water samples shall be collected bi-weekly on a year-round basis. The lake sampling sites will be located in the open water portion of the lake with one in the northern portion and one in the southern portion of the lake. *In situ* measurements of water quality shall be made. The water quality probes will be calibrated immediately prior to departure to the field against known pH, EC, and DO solutions. Secchi depth, a measurement of transparency, will also be measured with a standard Secchi disk or other approved method. Additionally, a staff gauge shall be placed in an appropriate location at the lake to measure changes in lake elevation.

TMDL Element	Regulatory Provisions
Special Studies and Monitoring Plan (continued)	The monitoring plan shall consider stratification for the collection of water samples. Water samples shall be analyzed for constituents including but not limited to the following. ▪ Total nitrogen ▪ Total phosphorus ▪ Nitrate (NO_3-N) ▪ Total ammonia (NH_3-N) ▪ Ortho-phosphorus (PO_4) ▪ Total Dissolved Solids ▪ Total Suspended Solids ▪ Chlorophyll a ▪ Turbidity Detection limits shall be less than the numeric targets in this TMDL. A monitoring report shall be prepared and submitted to the Regional Board annually within six months after the completion of the final sampling event of the year. If an alternative WLA compliance option is selected, an appropriate separate TMDL compliance MRP Plan and TMDL Implementation Plan must be submitted for Executive Officer approval. Annual monitoring reports demonstrating compliance or non-compliance with WLAs shall be submitted for Executive Officer approval. All compliance monitoring must be conducted in conjunction with a Regional Board approved Quality Assurance Project Plan (QAPP). The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification.
Implementation Plan	Compliance with the TMDL is based on the assigned WLAs and LAs. Compliance with this TMDL will require the implementation of NPDES stormwater permit limits and lake management activities to reduce nutrient loading to the lake, reduce nutrient concentrations in the lake, prevent excessive algal biomass growth, and maintain an adequate dissolved oxygen concentration. Table 7-29.2 contains a schedule for responsible jurisdictions to implement BMPs and a Lake Water Quality Management Plan to comply with the TMDL. I. Implementation and Determination of Compliance with LAs Compliance with the LAs will be measured in the lake and will be achieved through a combination of implementation of lake management projects and BMPs to reduce external and internal nutrient loading to the lake and to reduce and manage internal nutrient sources.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	Load allocations will be implemented through the following: (1) Memorandum of Agreement (MOA), or (2) Clean Up and Abatement Order or Other Regulatory Order The responsible jurisdictions for the load allocations shall be allowed one year from the effective date of this TMDL to enter into a Memorandum of Agreement (MOA) with the Executive Officer, detailing the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall comply with the Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options ("Policy"), including part II, section 2 c ii and related provisions, and shall be consistent the requirements of this TMDL. If the MOA is timely adopted, and so long as it is implemented, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of Policy section 2 e. The MOA shall include development of a Lake Water Quality Management Plan (LWQMP), must be approved by the Executive Officer, and may be amended with Executive Officer approval, as necessary. If a MOA is not established with responsible jurisdictions within one year or if responsible jurisdictions do not comply with the terms of the MOA, a cleanup and abatement order pursuant to Water Code section 13304, or another appropriate regulatory order, shall be issued to implement the load allocations. Furthermore, the implementation of the MOA must result in attainment of the TMDL load allocations. If the MOA and LWQMP are not implemented or otherwise do not result in attainment of load allocations, the certification shall be revoked, the MOA rescinded, and the load allocations shall be implemented through a cleanup and abatement order, or other order, as described above. Implementation of the MOA shall be reviewed annually by the Executive Officer as part of the Monitoring and Reporting Program (MRP) annual reports. To the satisfaction of the Executive Officer the LWQMP shall meet the following criteria: ▪ One and one half years from the effective date of the TMDL responsible jurisdictions shall submit a LWQMP, MRP Plan and QAPP for approval by the Executive Officer. ▪ The LWQMP shall include a list of cooperating parties.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	▪ The LWQMP shall address appropriate water quality monitoring and a timeline for the implementation of management practices to reduce and manage nutrient loading to the lake. The timeline shall ensure that the implementation actions are underway prior to Regional Board reconsideration of the TMDL. The LWQMP shall present a comprehensive management plan and strategy for achieving the LAs at Machado Lake and attaining numeric targets and beneficial uses. The LWQMP shall include a schedule for implementation actions. ▪ The LWQMP shall achieve compliance with the load allocations through the implementation of lake management strategies to reduce and manage internal nutrient sources. The lake management implementation actions may include, but are not limited to the following: ▪ Wetland restoration ▪ Aeration system ▪ Hydraulic Lake dredging ▪ Hydroponic Islands ▪ Alum treatment ▪ Fisheries Management ▪ Macrophyte Management and Harvesting ▪ Maintain Lake Level – Supplemental Water ▪ The LWQMP shall include a MRP Plan. The MRP shall include a requirement that the responsible jurisdictions report compliance and non-compliance with load allocations as part of annual reports submitted to the Regional Board. Compliance with the load allocations shall be measured in the lake at two locations, one in the north portion and one in the south. The average of these two sampling locations shall determine compliance with the load allocations. MRP protocols may be based on Surface Water Ambient Monitoring Program (SWAMP) protocols for water quality monitoring or alternative protocols proposed by dischargers and approved by the Executive Officer. ▪ A QAPP shall also be submitted to the Regional Board for approval by the Executive Officer to ensure data quality. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. The QAPP may be based on SWAMP protocols for water quality monitoring and quality assurance or alternative protocols proposed by dischargers and approved by the Executive Officer. ▪ The MOA and LWQMP program shall include assurances that it will be implemented by the responsible jurisdiction.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	▪ Implementation of the LWQMP program should include a Health and Safety Plan to protect personnel. The Executive Officer may require a revised assessment under the MOA and LWQMP: (a) To prevent nutrients from accumulating or recycling in the lake in deleterious amounts that impair water quality, contribute to negative eutrophic conditions or adversely affect beneficial uses; (b) To reflect the results of nutrient assessment or special studies Cleanup and Abatement Order or Other Regulatory Order: Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the allocations, reductions, and schedule described in Table 7-29.2. ❖ Determination of Compliance with Interim LAs Responsible parties shall comply with numeric interim LAs or may be deemed in compliance with the interim LAs through implementation of lake sediment removal and/or lake management implementation actions in accordance with the LWQMP schedule as approved by the Regional Board Executive Officer. II. Implementation and Determination of Compliance with WLAs WLAs will be incorporated into NPDES stormwater permits. Stormwater permittees may be deemed in compliance with waste load allocations by actively participating in a LWQMP and attaining the waste load allocations for Machado Lake. Stormwater permittees and the responsible party for the lake may work together to implement the LWQMP and reduce external nutrient loading to attain the TMDL waste load allocations measured in the lake. Alternatively, MS4 Permittees may be deemed in compliance with waste load allocations by demonstrating reduction of total nitrogen and total phosphorous on an annual mass basis measured at the stormdrain outfall of the permittee's drainage area. The annual mass based allocation shall be equal to a monthly average concentration of 0.1 mg/L TP and 1.0 mg/L TN based on approved flow conditions. Permittees must demonstrate total nitrogen and total phosphorous load reductions to be achieved in accordance with a special study workplan approved by the Executive Officer. Compliance may also be demonstrated as concentration based monthly averages for TP and TN measured at the stormdrain outfall of the permittee's drainage area.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	MS4 Permittees shall be required to develop and implement a MRP plan and TMDL Implementation Plan. The MRP plan shall include a requirement that the responsible jurisdictions report compliance and non-compliance with waste load allocations as part of annual reports submitted to the Regional Board. ❖ Determination of Compliance with Interim WLAs Responsible parties may comply with the numeric interim WLAs or may be deemed in compliance with the interim WLAs through implementation of external nutrient source reduction projects in accordance with the TMDL Implementation Plan schedule as approved by the Regional Board Executive Officer. The Regional Board may revise these WLAs and the compliance point based on the collection of additional information developed through special studies or monitoring conducted as part of this TMDL. The Regional Board will reconsider the TMDL at 7.5 years from the effective date based on water quality monitoring and special studies. III. APPLICATION OF ALLOCATIONS TO RESPONSIBLE JURISDICTIONS Responsible jurisdictions to attain WLAs for this TMDL include but are not limited to: • Caltrans • General Stormwater Permit Enrollees • MS4 Permittees including: ➢ Los Angeles County ➢ Los Angeles County Flood Control District ➢ Cities of Carson, ➢ City of Lomita, ➢ City of Los Angeles, ➢ City of Palos Verdes Estates, ➢ City of Rancho Palos Verdes, ➢ City of Redondo Beach, ➢ City of Rolling Hills, ➢ City of Rolling Hills Estates, ➢ City of Torrance. The City of Los Angeles, Department of Recreation and Parks is responsible jurisdiction to implement the assigned Load Allocations for this TMDL.

Table 7-29.2 Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL: Implementation Schedule

Task Number	Task	Responsible Jurisdiction	Date
1	Effective date interim waste load (WLA) and load allocations (LA) for total nitrogen and total phosphorus apply.	California Department of Transportation (Caltrans), Municipal Separate Storm Sewer System Permittees[4] (MS4 Permittees), City of Los Angeles – Department of Recreation and Parks	Effective Date of TMDL
2	Responsible jurisdictions shall enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the load allocations.	City of Los Angeles – Department of Recreation and Parks	1 year from effective date of TMDL
3	Regional Board staff shall begin development of a Clean Up and Abatement Order or other regulatory order to implement the load allocations if an MOA is not established with responsible jurisdictions.	Regional Board Staff	1 year from effective date of TMDL
4	Clean Up and Abatement Order or other regulatory order adopted by the Regional Board if an MOA is not established with responsible jurisdictions. The Clean Up and Abatement Order or other regulatory order shall reflect the TMDL Implementation Schedule.	Regional Board Staff	1.5 years from effective date of TMDL
5	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit a Monitoring and Reporting Program (MRP) Plan to the Executive Officer for approval.	Caltrans, MS4 Permittees	One year from effective date of TMDL
6	Responsible jurisdictions shall submit a Lake Water Quality Management Plan, MRP Plan and Quality Assurance Project Plan for approval by the Executive Officer to comply with MOA.	City of Los Angeles – Department of Recreation and Parks	1.5 years from effective date of TMDL
7	Responsible jurisdictions shall submit a work plan for optional special study #3 (if responsible jurisdictions choose to conduct this special study) for approval by the Executive Officer.	Caltrans, MS4 Permittees	One year from effective date of TMDL
8	Responsible jurisdictions shall submit work plans for optional special studies #1 and #2 (if responsible jurisdictions choose to conduct special studies) for approval by the Executive Officer.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	1.5 years from effective date of TMDL

Task Number	Task	Responsible Jurisdiction	Date
9	Responsible jurisdictions shall begin monitoring as outlined in the approved MRP plan.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Sixty days from date of MRP Plan approval
10	Responsible jurisdictions shall begin implementation of Lake Water Quality Management Plan.	City of Los Angeles – Department of Recreation and Parks	Sixty days from date of Lake Water Quality Management Plan approval
11	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit a TMDL Implementation Plan including BMPs to address discharges from storm drains.	Caltrans, MS4 Permittees	Two years from effective date of TMDL
12	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall begin implementation of BMPs to address discharges from stormdrains	Caltrans, MS4 Permittees	Sixty days from date of Implementation Plan approval
13	Responsible jurisdictions shall submit annual monitoring reports. The monitoring reports shall include a requirement that the responsible jurisdictions demonstrate compliance with the MOA. If the MOA and Lake Water Quality Management Plan are not implemented or otherwise do not result in attainment of load allocations, the Regional Board shall revoke the MOA and the load allocations shall be implemented through a Clean Up and Abatement Order or other regulatory order.	City of Los Angeles – Department of Recreation and Parks	Annually – from date of Lake Water Quality Management Plan approval
14	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit annual monitoring reports.	Caltrans, MS4 Permittees	Annually – from date of MPR Plan approval
15	Optional Special Study #3 completed and final report submitted for Executive Officer approval.	Caltrans, MS4 Permittees	Within 2.5 years of effective date of TMDL
16	Responsible jurisdictions shall submit a MRP Plan and TMDL Implementation Plan for the alternative mass based WLA compliance option (if selected), to the Executive Officer for approval.	Caltrans, MS4 Permittees	Within 2.5 years of effective date of TMDL

Task Number	Task	Responsible Jurisdiction	Date
17	Responsible jurisdictions shall begin monitoring and implementing projects/ programs as outlined in the approved MRP and TMDL Implementation Plan for the alternative mass based WLA compliance option.	Caltrans, MS4 Permittees	Sixty days from date of MRP/ Implementation Plan approval
18	Responsible jurisdictions whose compliance is determined as mass based WLAs measured at end of pipe shall submit annual monitoring reports.	Caltrans, MS4 Permittees	Annually – from date of MPR/ Implementation Plan approval
19	Optional Special Studies completed and Special Study final reports submitted for Executive Officer approval.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Within 6 years of effective date of TMDL
20	Regional Board staff and responsible jurisdictions will present an Information Item to the Regional Board on the progress of TMDL implementation efforts and compliance with implementation schedules.	Regional Board staff and responsible jurisdictions	4 years from effective date of TMDL
21	5 Year interim total nitrogen WLA and LA apply.	Caltrans, MS4 permittees, City of Los Angeles – Department Recreation and Parks	Within 5 years of effective date of TMDL
22	Regional Board will reconsider the TMDL to include results of optional special studies and water quality monitoring data completed by the responsible jurisdictions and revise numeric targets, WLAs, LAs, and the implementation schedule as needed.	Regional Board	7.5 years from effective date of TMDL
23	Responsible jurisdictions shall achieve Final WLAs and LAs for total nitrogen (including ammonia) and total phosphorus and demonstrate attainment of numeric targets for total nitrogen, ammonia, total phosphorus, dissolved oxygen, and chlorophyll a. Responsible parties shall demonstrate attainment of water quality standards for total nitrogen, ammonia, total phosphorus, dissolved oxygen, and biostimulatory substances in accordance with federal regulations and state policy on water quality control.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Within 9.5 years of effective date of TMDL

[4] Municipal Separate Storm Sewer System (MS4) Permittees that are responsible for discharges to Machado Lake include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

7-30 Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 1, 2009**.**

This TMDL was approved by:
The State Water Resources Control Board on November 16, 2010.
The Office of Administrative Law on May 6, 2011.
The U.S. Environmental Protection Agency on June 14, 2011.

The effective date of this TMDL is: June 14, 2011.

The elements of the TMDL are presented in Table 7-30.1 and the Implementation Plan in Table 7-30.2

Table 7-30.1. Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	Colorado Lagoon is identified on the 1998, 2002, and 2006 Clean Water Act Section 303(d) lists of water-quality limited segments as impaired due to elevated levels of OC pesticides, PCBs, sediment toxicity, PAHs, and metals in fish tissue and sediment. Applicable fish tissue, sediment, and water quality objectives for this TMDL are narrative objectives for chemical constituents, bioaccumulation, pesticides, and toxicity; and numeric objectives for metals and organic compounds. The beneficial uses of Colorado Lagoon include water contact recreation (REC-1) and non-contact water recreation (REC-2), commercial and sport fishing (COMM), warm freshwater habitat (WARM), wildlife habitat (WILD), and shellfish harvesting (SHELL). The goal of this TMDL is to protect and restore fish tissue and sediment quality in Colorado Lagoon by controlling the contaminated sediment loading and accumulation of contaminated sediment in the lagoon.

TMDL Element	Regulatory Provisions
Numeric Targets	Colorado Lagoon is listed on the 303(d) list for sediment toxicity, PAHs, lead, and zinc in sediment; DDT, Dieldrin, and PCBs in fish tissue; and chlordane in fish tissue and sediment. In order to address these listings, water column, fish tissue and sediment targets are selected. The following table provides the numeric targets for the Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL.

Numeric targets for water, fish tissue, and sediment for OC Pesticides, PCBs, PAHs, and metals

Constituents	Water Quality Target[1] (ug/L)	Fish Tissue Target[2] (ug/kg)	ERL Sediment Target[3] (ug/dry Kg)
Chlordane	0.00059	5.60	0.50
DDTs	0.00059	21.00	1.58[4]
Dieldrin	0.00014	0.46	0.02
PCBs	0.00017[5]	3.60[6]	22.70
Total PAHs[7]	0.049[8]	5.47	4,022.00
Total LPAHs[9]	NA	NA	552.00
Total HPAHs[10]	NA	NA	1,700.00
Lead	8.10[11]	NA	46,700.00
Zinc	81.00[11]	NA	150,000.00

1 The California Toxics Rule (CTR) water quality criteria for consumption of organisms only are applied as the numeric targets for Chlordane, 4,4' DDT, Dieldrin, and PCBs for protection of human health. The CTR aquatic life criteria for saltwater are applied as the numeric targets for protection of aquatic life for lead and zinc.

2 Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goals are applied as numeric targets for Chlordane, DDTs, Dieldrin, and PCBs. The U.S. Environmental Protection Agency (USEPA) screening value is applied as the numeric target for total PAHs.

3 Effect Range Low (ERL) sediment criteria from National Oceanic and Atmospheric Administration (NOAA) Sediment Quality Guidelines are applied as numeric targets.

4 DDTs in sediment are measured as the sum of DDT, DDE, and DDD.

5 PCBs in water are measured as the sum of all congener or isomer or homolog or aroclor.

6 PCBs in fish tissue and sediment are measured as sum of all congeners.

7 PAHs: Polycyclic aromatic hydrocarbons (sum of acenaphthylene, anthracene, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene).

8 CTR human health criteria were not established for total PAHs, Therefore, the lowest CTR criteria for individual PAHs of 0.049 ug/L is applied to the sum of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. Other PAHs compounds in the CTR shall be screened as part of the TMDL monitoring plan.

9 LPAHs: Low molecular weight PAHs.

10 HPAHs: High molecular weight PAHs.

11 Saltwater criteria for metals are expressed in terms of the dissolved fraction of metals in water column.

TMDL Element	Regulatory Provisions
Source Analysis	**Point sources** The point sources of OC pesticides, PCBs, PAHs, and metals discharged to Colorado Lagoon are urban runoff and stormwater discharges from the municipal separate storm sewer systems (MS4s) and California Department of Transportation (Caltrans). The Colorado Lagoon watershed is divided into five sub-basins that discharge stormwater and urban dry weather runoff to Colorado Lagoon. Each of the sub-basins is served by a major storm sewer trunk line and supporting appurtenances that collect and transport stormwater and urban dry weather runoff to Colorado Lagoon. The sub-basins are as follows: **Sub-basin A.** Discharges to Colorado Lagoon via a 63-inch reinforced concrete pipe owned and operated by the Los Angeles County Flood Control District (Project 452 Drain) discharging into the north part of the west arm. The drainage pattern is generally to the south and east. Sub-basin A contains the most commercial activities mainly along Anaheim Street and the northern part of Redondo Avenue. **Sub-basin B.** Discharges to Colorado Lagoon via a 54-inch reinforced concrete pipe (Line I Storm Drain) discharging into the north part of the north arm. The drainage pattern is generally to the south and west. Sub-basin B is predominately park/golf course open space with some residential areas on the north east corner. **Sub-basin C.** Discharges to Colorado Lagoon via a 48-inch reinforced concrete pipe (Line K Storm Drain) discharging into the mid-point of the north arm. The drainage pattern is generally to the south and west. Sub-basin C is almost entirely residential with a few commercial activities at the eastern boundary. **Sub-basin D.** Discharges to Colorado Lagoon via a 24-inch reinforced concrete pipe (Line M Storm Drain) discharging into the south part of the west arm. The drainage pattern is generally to the north and east. Sub-basin D is almost entirely residential with schools and other public facilities. **Sub-basin E.** Discharges to Colorado Lagoon via a 48-inch reinforced concrete pipe (Termino Avenue Drain) discharging into the west arm. The drainage pattern is generally to the south and east. Sub-basin E is mainly residential with commercial activities located along 7th Street, Coronado and Redondo Avenues to the west, and public facilities to the north. Several other smaller storm drains serve the areas immediately adjacent to the lagoon. These smaller storm drains contribute small amounts of contaminants relative to the five sub-basin discharges described above.

TMDL Element	Regulatory Provisions
Source Analysis (continued)	**Non-point Sources** Sediment loading from non-point sources to Colorado Lagoon is mainly runoff from urban, recreational park areas including two golf courses and adjacent park areas, a right-of-way greenbelt, and the picnic and park areas surrounding Colorado Lagoon, and atmospheric deposition.
Linkage Analysis	This TMDL analysis makes a simplifying assumption that the relationship between OC pesticides and PCBs concentrations in fish tissue and sediments is linear, with the slope of the line being the overall sediment–organism bioaccumulation factor (BAF). The impairing contaminants in sediment are associated with fine-grained particles that are primarily delivered to the sediments through suspended solids in stormwater and urban runoff. It is expected that reductions in loadings of these pollutants will lead to reductions in sediment concentrations over time. The existing contaminants in surface sediments will be removed by dredging operations and reduced as sediments are scoured during storms. For the legacy pollutants (chlordane and PCBs), some losses will also occur through the slow decay and breakdown of these organic compounds. Concentrations in surface sediments will be reduced through mixing with cleaner sediments. Attenuation of pollutant concentration levels in sediment is expected to translate to reductions in fish tissue contaminant levels. The linkage analysis focuses on the relationship between source contributions and in-lagoon water and sediment response. The Environmental Fluid Dynamics Code (EFDC) model was selected to simulate source loadings and transport of the listed pollutants in the Colorado Lagoon. This model estimates the metals, PAHs, PCBs, and DDT concentrations in the receiving water to evaluate potential management scenarios and to identify waste load allocations to support water and sediment quality management decisions for Colorado Lagoon. Hydrodynamic, water quality, and sediment transport was developed to simulate the dynamic interaction between Marine Stadium and Colorado Lagoon.
Waste Load Allocations	**Sediment Waste Load Allocations (WLAs) for MS4 Discharges:** <u>Mass-based WLAs for MS4 Discharges</u> Mass-based waste load allocations for MS4 permittees including the City of Long Beach, Los Angeles County Flood Control District, and Caltrans are allocated to the five major storm drain outfalls that currently discharge to the lagoon. Because Colorado Lagoon is located completely within the jurisdictional boundaries of the City of Long Beach and land areas serviced by storm drains that currently discharge to the lagoon are under the jurisdiction of the City of Long Beach, the WLAs are assigned to the City of Long Beach. Caltrans and the City of Long Beach shall each be responsible for achieving the WLAs assigned to the Line I Storm Drain as it conveys stormwater from both Caltrans' facilities and the City of Long Beach. The Los Angeles County Flood Control District (District) owns and operates the Project 452 Storm Drain; therefore, the District and the City of Long Beach shall each be responsible for achieving the WLAs assigned to the Project 452 Storm Drain. Mass-based WLAs are applied as annual limits and compliance with the mass-based WLAs for sediment will be determined at the storm drain outfalls to the lagoon.

TMDL Element	Regulatory Provisions
Waste Load Allocations (continued)	(see tables and text below)

Constituent	**Final Mass-based WLAs (mg/yr)**				
	Project 452	**Line I**	**Termino Ave**	**Line K**	**Line M**
Chlordane	5.10	3.65	12.15	1.94	0.73
Dieldrin	0.20	0.15	0.49	0.08	0.03
Lead	476,646.68	340,455.99	1,134,867.12	181,573.76	68,116.09
Zinc	1,530,985.05	1,093,541.72	3,645,183.47	583,213.37	218,788.29
PAHs	41,050.81	29,321.50	97,739.52	15,637.89	5,866.44
PCBs	231.69	165.49	551.64	88.26	33.11
DDT	16.13	11.52	38.40	6.14	2.30

Concentration-based WLAs for MS4 Discharges

Concentration-based WLAs for sediment are assigned to MS4 permittees including the City of Long Beach, Los Angeles County Flood Control District, and Caltrans. Concentration-based WLAs for sediment are applied as average monthly limits. Compliance with the concentration-based WLAs for sediment shall be determined by pollutant concentrations in the sediment in the lagoon at points in the West Arm, North Arm, and Central Arm that represent the cumulative inputs from the MS4 drainage system to the lagoon. Concentration-based WLAs for sediment are also assigned to all other minor storm drains discharging from the MS4 to the lagoon.

Concentration-based interim WLAs for sediment are set to allow time for removal of contaminated sediment through proposed implementation actions. Interim WLAs are based on the 95th percentile value of sediment data collected from 2000 to 2008. The use of 95th percentile values to develop interim limits is consistent with current NPDES permitting methodology. If the 95th percentile is equal to or lower than the numeric target, the interim limit is equal to the final WLAs. Interim and final WLAs will be included in MS4 permits in accordance with NPDES guidance and requirements.

Constituent	**Concentration-based WLAs**	
	Interim WLAs (ug/dry kg)	**Final WLAs (ug/dry kg)**
Chlordane	129.65	0.50
Dieldrin	26.20	0.02
Lead	399,500.00	46,700.00
Zinc	565,000.00	150,000.00
PAHs	4,022.00	4,022.00
PCBs	89.90	22.7
DDT	149.80	1.58

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)</td><td>Sediment Waste Load Allocations for Other Point Sources

Concentration-based waste load allocations are assigned to minor NPDES permits, other stormwater, and non-stormwater permittees. Any future minor NPDES permits or enrollees under a general non-stormwater NPDES permit, general industrial stormwater permit or general construction permit will also be subject to the concentration-based waste load allocations.

<table>
<tr><th>Constituents</th><th>Waste Load Allocation (ug/dry kg)</th></tr>
<tr><td>Chlordane</td><td>0.50</td></tr>
<tr><td>Dieldrin</td><td>0.02</td></tr>
<tr><td>Lead</td><td>46,700.00</td></tr>
<tr><td>Zinc</td><td>150,000.00</td></tr>
<tr><td>PAHs</td><td>4,022.00</td></tr>
<tr><td>PCBs</td><td>22.70</td></tr>
<tr><td>DDT</td><td>1.58</td></tr>
</table></td></tr>
<tr><td>Load Allocations</td><td>A mass-based load allocation is developed for direct atmospheric deposition. An estimate of direct atmospheric deposition was developed based on the percent area of surface water within the watershed, which is approximately 15 acres or 1.3% of the total watershed area. The load allocation for atmospheric deposition is calculated by multiplying this percentage by the total loading capacity.

<table>
<tr><th>Constituent</th><th>Load Allocation (mg/year)</th></tr>
<tr><td>Chlordane</td><td>0.36</td></tr>
<tr><td>Dieldrin</td><td>0.014</td></tr>
<tr><td>Lead</td><td>33,217.48</td></tr>
<tr><td>Zinc</td><td>106,694.25</td></tr>
<tr><td>PAHs</td><td>2,860.83</td></tr>
<tr><td>PCBs</td><td>16.15</td></tr>
<tr><td>DDT</td><td>0.71</td></tr>
</table></td></tr>
<tr><td>Margin of Safety</td><td>An implicit margin of safety exists in the final WLAs. The implicit margin of safety is based on the selection of multiple numeric targets, including targets for water, fish tissue and sediment to protect human health, and the selection of ERLs as numeric targets for sediment, which are the most protective of the potentially applicable sediment guidelines available.

Additionally, to address sources of uncertainty in the analysis, particularly the assumption of natural removal of contaminated sediment at the northern arm of the lagoon, an explicit 10% margin of safety is also included.</td></tr>
</table>

TMDL Element	Regulatory Provisions
Seasonal Variations and Critical Conditions	No correlation with flow or seasonality (wet vs. dry season) was found to exist in sediment or tissue data. Given that allocations for this TMDL are expressed in terms of OC pesticides, PCBs, PAHs, and metals concentrations in sediment, a critical condition is not identified based upon flow or seasonality. Because the adverse effects of OC pesticides, PCBs, PAHs, and metals are related to sediment accumulation and bioaccumulation in the food chain over long periods of time, short term variations in concentrations are less likely to cause significant impacts upon beneficial uses.
Monitoring Plan	The Colorado Lagoon TMDL Monitoring Plan (CLTMP) is designed to monitor and evaluate implementation of this TMDL, and refine the understanding of current sediment loadings. The goals of the CLTMP are: To determine compliance with OC pesticides, PCBs, metals, and PAHs waste load and load allocations, To monitor the effectiveness of implementation actions proposed by Los Angeles County Flood Control District and the City of Long Beach on water and sediment quality, including the potential impacts of redirecting discharges from the Termino Ave. Drain and from cleaning the culvert on Marine Stadium and Colorado Lagoon, To monitor contaminated sediment levels in the Lagoon especially in the North Arm of the Lagoon and determine if additional implementation action such as dredging are necessary to achieve the TMDL, and To implement the CLTMP in a manner consistent with other TMDL implementation plans and regulatory actions within the Colorado Lagoon watershed. Monitoring shall begin six months after the monitoring plan is approved by the Executive Officer. Water column and sediment samples will be collected at the outlet of the storm drains discharging to the lagoon, while water column, sediment, and fish tissue samples will be collected in the West Arm, Central Arm, North Arm, at the outlet of the lagoon to Marine Stadium during an incoming tide, and at the outfall of Termino Ave. Drain to Marine Stadium. The number and location of monitoring sites shall be specified in the monitoring plan to be approved by the Executive Officer. The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans are each responsible for conducting water, sediment, and fish tissue monitoring. However, they are encouraged to collaborate or coordinate their efforts to avoid duplication and reduce associated costs. Water quality samples and total suspended solids samples shall be collected quarterly in the first year and semi-annually thereafter and analyzed for chlordane, dieldrin, OC pesticides, and total PCBs at detection limits that are at or below the minimum levels. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, 2005.

TMDL Element	Regulatory Provisions
Monitoring Plan (continued)	Water quality samples shall also be collected quarterly in the first year and semi-annually thereafter and analyzed for general water quality constituents (GWQC), total recoverable and dissolved PAHs, lead, and zinc. If water quality objectives are exceeded at any time, sampling frequency shall be accelerated to quarterly thereafter until water quality objectives are not exceeded. Total suspended solid samples shall also be collected to analyze for PAHs, lead, and zinc. For metal analysis, methods that allow for (1) the removal of salt matrix to reduce interference and avoid inaccurate results prior to the analysis; and (2) the use of trace metal clean sampling techniques, must be applied. Examples of such methods include EPA Method 1669 for sample collection and handling, and EPA Method 1640 for sample preparation and analysis. Sediment samples will be collected annually for analysis of general sediment quality constituents (GSQC), OC pesticides, PCBs, PAHs, and metals. Lead, zinc, chlordane, dieldrin, and total PCBs shall be analyzed at detection limits that are lower than the ERLs. The sediment toxicity testing shall include testing a minimum of three species for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test, the sea urchin fertilization testing using sediment pore water, and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the first year. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28-day tests. Sediment toxicity monitoring shall be conducted annually to provide sufficient data over the implementation timeframe to evaluate changes in sediment quality due to implementation actions. If sediment objectives are exceeded or sediment toxicity is observed at any time, sampling frequency for both sediment and sediment toxicity shall be accelerated to semi-annually thereafter until sediment objectives are not exceeded and sediment toxicity is not observed. Fish tissue samples will be collected annually and analyzed for chlordane, dieldrin, DDT, and PCBs to assess changes in concentrations of target organic constituents. The same rationale used for establishing sampling frequency for sediments is used to establish fish tissue sample collection frequency. For Colorado Lagoon, species with the potential for human and wildlife consumption will be targeted. Fish targeted to evaluate potential impacts to human health will be limited to species more commonly consumed by humans. Tissues analyzed will be based on the most appropriate and common preparation for the selected fish species. Tissues from resident California or bay mussels shall be collected annually and analyzed to further assess and track impairment. Monitoring reports shall be prepared and submitted to the Regional Board annually within six months after the completion of the final sampling event of the year. All compliance monitoring must be conducted in conjunction with a Regional Board approved Quality Assurance Project Plan (QAPP). The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification.

TMDL Element	Regulatory Provisions
Implementation Plan	The City of Long Beach, Los Angeles County Flood Control District, and California Department of Transportation (Caltrans) are each responsible for meeting the waste load allocations. However, to the extent their effluent discharges are commingled, they will be held jointly liable for abating the pollutants in the commingled discharge to the extent any of them are unable to disprove their own contribution of pollutants. Compliance with the TMDL is determined based on the assigned WLAs. NPDES permits will be amended to be consistent with the assumptions and requirements of the WLAs. Responsible agencies are required to implement the proposed actions to remove contaminated sediment; control the discharges of pollutants in urban runoff, stormwater and contaminated sediments to Colorado Lagoon; attain water, fish tissue, and sediment quality standards; and protect beneficial uses. Table 7-30.2 contains a schedule for responsible agencies to implement BMPs and proposed implementation actions to comply with the TMDL. Responsible agencies may employ a variety of implementation strategies such as non-structural and structural best management practices (BMPs) to meet the required waste load allocations. The implementation actions described in this section represent a range of activities that are proposed by the Los Angeles County Flood Control District and City of Long Beach in the *Los Angeles County Termino Avenue Drain Project* and *Colorado Lagoon Restoration Project*, respectively. **Implementation and Determination of Compliance with the WLAs** The WLAs will apply to all NPDES dischargers in the Colorado Lagoon watershed. The regulatory mechanisms used to implement the TMDL include the Los Angeles County MS4 permit, the City of Long Beach MS4 permit, the Caltrans stormwater permit, and any future general industrial stormwater permits, general construction stormwater permits, minor NPDES permits, and general NPDES permits as well as any other appropriate regulatory mechanism, including Board orders, where required. Each NPDES permit may be reopened immediately after the TMDL becomes effective, or amended at re-issuance, in accordance with applicable laws, to incorporate the waste load allocations and other provisions of this TMDL. Compliance with the WLAs will be measured at the storm drain outlets and in the lagoon and will be achieved through BMPs and a combination of proposed implementation actions provided in the Proposed Implementation section below to remove contaminated sediment and reduce loadings of contaminated sediment through the control of stormwater and contaminated sediments to Colorado Lagoon. The final WLAs will be included for permitted MS4 discharges and other NPDES discharges in accordance with the compliance schedules provided in Table 7-30.2. The Regional Board may revise these WLAs based on additional information developed through monitoring or special studies.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	The WLAs for the minor NPDES permits and general non-stormwater NPDES permits will be implemented through effluent limitations consistent with the assumptions and requirements of the WLAs. Permit writers for the non-stormwater permits may translate applicable waste load allocations into effluent limitations for the minor and general NPDES permits by applying applicable engineering practices. **Proposed Implementation Actions** <u>Non-Structural Best Management Practices</u> The non-structural BMPs are based on the premise that specific land uses or critical sources can be targeted to achieve the TMDL waste load allocations. Available non-structural BMPs include better sediment control at construction sites and improved street cleaning by upgrading to vacuum type sweepers, storm drain cleaning, and public education and out reach. The lagoon is also impacted by irrigation runoff from the golf course located adjacent to the lagoon in the dry season. Improvements to the golf course operation should also be considered to protect lagoon resources by reducing watering needs and eliminating pesticide and herbicide use. <u>Site-Specific Implementation Actions:</u> The Regional Board does not prescribe the methods of achieving compliance with the TMDL allocations. However, described below are several implementation actions proposed by the responsible agencies. *Relocation of the Termino Avenue Drain.* One of the major system outfalls, the Termino Avenue Drain, has been proposed by the Los Angeles County Flood Control District to be modified, which will no longer discharge into the Lagoon. As proposed in the Los Angeles County Flood Control District Termino Avenue Drain Project (TADP) the drain would bypass the Lagoon and discharge stormwater flows into Marine Stadium. Dry weather flows will be diverted into the sanitary sewer system. This project would also redirect flows from three other storm drains located on the south shore of the Lagoon that currently discharge into the Lagoon. *Low Flow Diversion and Trash Separation Device.* The City of Long Beach proposed in the Colorado Lagoon Restoration Project to divert low storm drain flows from other three major storm drain system outfalls and install trash separation devices to trap trash and debris prior to entering the wet well for the diverted runoff. The Colorado Lagoon Restoration Project would redirect or treat low flows from these drains to minimize contamination to water and sediment.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	*Vegetated Bioswale Installation.* The flows from the remaining four local storm drains would be treated via a vegetated bioswale as proposed in the Colorado Lagoon Restoration Project. A bioswale would also be developed on the north shore between the Lagoon and Recreation Park Golf Course. The vegetated bioswale would treat stormwater and dry weather runoff through filtration to remove sediment and pollutants prior to discharging into the Lagoon. *Clean Culvert, Repair Tidal Gates, and Remove Sill/Structural Impedances.* The Colorado Lagoon is connected to Alamitos Bay and the Pacific Ocean through an underground tidal culvert to Marine Stadium. The existing culvert has not been cleaned since it was built in the 1960s. The flow in the culvert is impeded by sediment that has accumulated on the bottom, extensive marine growth that has accumulated on the sides and ceiling, and debris that is trapped within the trash racks on the tide gate screens at both ends of the culvert. These existing conditions limit the Lagoon's tidal range and tidal flushing, which results in increased degradation of water quality. As proposed in the Colorado Lagoon Restoration Project, the City of Long Beach plans to clean the existing culvert and trash racks, repair the tidal gates, and remove the sill and structural impedances within and around the existing culvert. Implementation of this component of the Colorado Lagoon Restoration Project would result in increased tidal range, tidal flushing, and water circulation, and improvement of water and sediment quality. *Remove Contaminated Sediment in the Western Arm of the Lagoon.* OC pesticides, PCBs, PAHs, and metals were deposited over time from the particulates in the runoff brought to the Lagoon through the existing storm drains. It is estimated that the layer of contaminated sediment reaches 4 to 5 ft deep. The City of Long Beach proposes to remove sediment to a depth of 6 ft to provide a safeguard that only clean sediment remains. The excavation depth gradually decreases toward the footbridge. This component of the Colorado Lagoon Restoration Project would remove approximately 16,000 cubic yards (cy) of contaminated sediment within the western arm of the Lagoon. *Remove Contaminated Sediment in the Central Lagoon.* Similar to the sediment removal project above, the Colorado Lagoon Restoration Project would remove sediment and sand that has eroded and been deposited into the Lagoon over years, and create a larger subtidal area. Approximately 5,500 cy of sediment would be removed from the central Lagoon. Sediment removal from the central area of the lagoon would create a channel through the center of the central Lagoon to connect the dredge areas in the western arm to the outlet at the existing culvert or proposed open channel. Removal of this sediment would also provide additional space for water circulation and tidal flushing.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	As proposed in the Colorado Lagoon Restoration Project, only the Western Arm and the Central Lagoon are planned to be dredged based on the recommendation from the Sediment Testing and Disposal Report. The TMDL monitoring program will determine if additional implementation actions such as dredging in the North Arm will be required to remove contaminated sediment in the Lagoon. *Build Alternate Channel or Underground Culvert between Lagoon and Marine Stadium.* City is considering an open channel or parallel underground culvert option to further improve water quality at the Colorado Lagoon. However, this project was not included in the certified EIR. This proposed project consists of replacing the existing concrete box culvert with an open channel or new underground culvert that would run from the Lagoon through Marina Vista Park to Marine Stadium in a location generally parallel to the existing culvert. Creating an open channel or underground culvert would improve tidal flushing by an increase in the tidal range, and result in a corresponding improvement of water and sediment quality. In addition, it would provide improved flood flow conveyance. Implementation of the proposed actions should result in attainment of the TMDL allocations. If the proposed actions are not implemented or otherwise do not result in attainment of allocations, additional implementation actions shall be required.

Table 7-30.2 Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL: Implementation Schedule

Item	Implementation Action	Responsible Party	Date
1	Effective date of interim waste load allocations (WLAs).	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	Effective date of the TMDL
2	Responsible agencies shall submit a monitoring plan to the Los Angeles Regional Board for Executive Officer approval.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	6 months after effective date of the TMDL
3	Responsible agencies shall begin monitoring as outlined in the approved monitoring plan.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	6 months after monitoring plan approved by E.O.
4	Responsible agencies shall submit annual reports to the Los Angeles Regional Board for review.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	15 months after monitoring starts and annually thereafter
5	Responsible agencies shall submit bi-annual progress reports to provide updates on the status of implementation actions performed under the TMDL. The plan shall contain mechanisms for demonstrating progress toward meeting the assigned WLAs.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	Every 2 years after effective date of the TMDL
6	Responsible agencies shall achieve WLAs.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	7 years after effective date of the TMDL

7-31 Malibu Creek Watershed Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on May 1, 2008.

This TMDL was approved by:

The State Water Resources Control Board on March 17, 2009.
The Office of Administrative Law on June 16, 2009.
The U.S. Environmental Protection Agency on June 26, 2009.

The effective date of this TMDL is: July 7, 2009.

The elements of the TMDL are presented in Table 7-31.1 and the Implementation Plan in Tables 7-31.2a and 7-31.2b.

Table 7-31.1 Malibu Creek Watershed Trash TMDL: Elements

Element	Malibu Creek Watershed Trash TMDL
Problem Statement	Discharges of trash into Malibu Creek, Malibu Lagoon, Malibou Lake, Medea Creek (Reach 1 and Reach 2), Lindero Creek (Reach 1 and Reach 2), Lake Lindero, and Las Virgenes Creek violate water quality objectives and impair beneficial uses. The waterbodies above were listed in the 1998, 2002, 2004, and 2006 303(d) lists of impaired waterbodies for trash. Relevant water quality objectives in the Water Quality Control Plan Los Angeles Region include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impaired by trash: municipal and domestic supply (MUN), ground water recharge (GWR), contact water recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), wildlife habitat (WILD), rare, threatened, or endangered species (RARE), spawning, reproduction, and or early development (SPWN), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in the above listed subwatersheds of the Malibu Creek Watershed, and on the shorelines of those waterbodies. Zero is defined for nonpoint sources as no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections. For point sources, zero is defined as no trash discharged into the listed waterbodies of the Malibu Creek Watershed and on the shoreline of those waterbodies.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Malibu Creek Watershed. Point sources such as storm drains are also sources of trash discharged to Malibu Creek Watershed.
Loading Capacity	Zero, as defined in the Numeric Target.

Element	Malibu Creek Watershed Trash TMDL
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation (Caltrans, permittee for Statewide National Pollutant Discharge Elimination System (NPDES) Storm Water Permit, No. 99-06-DWQ), Los Angeles County (principal permittee for NPDES Los Angeles County Municipal Separate Strom Sewer System (MS4) permit, No. CAS004001), and the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village (co-permittees for NPDES Los Angeles County MS4 permit) under the NPDES Los Angeles County MS4 permit, and to Ventura County Watershed Protection District (principal permittee for NPDES Ventura County MS4 permit, No. 004002), County of Ventura, and City of Thousand Oaks (co-permittees for NPDES Ventura County MS4 permit) under the NPDES Ventura County MS4 permit. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the USEPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Malibu, Agoura Hills, Hidden Hills, Thousand Oaks, Westlake Village, and Calabasas, and land owners in the vicinity of listed waterbodies in the Malibu Creek Watershed. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Malibu Creek Watershed includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to the listed subwatersheds of the Malibu Creek Watershed through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	In certain circumstances, (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for installing partial capture systems (PCS) in conjunction with best management practices. Compliance through implementation of a PCS/BMP program must demonstrate attainment of WLAs through trash monitoring in accordance with the Trash Monitoring and Reporting Plan (TMRP) approved by the Executive Officer. 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources discharges that choose to comply via a full capture system must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to the listed subwatersheds of the Malibu Creek Watershed. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a PCS/BMP program may be proposed to the Regional Board for incorporation into the relevant NPDES permit. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, (2) an alternative program implemented through waste discharge requirements, or (3) an individual waiver or another appropriate order of the Regional Board.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Malibu Creek Watershed. For individual subwatershed in the Malibu Creek Watershed, the initial minimum frequency shall be set as follows: <u>Malibu Creek (from Malibu Lagoon to Malibou Lake)</u> 1. Within City of Malibu, the waterbody, shorelines and areas adjacent to Malibu Creek: once per week and within 72 hours after critical conditions. 2. Within the County of Los Angeles and in the State Parks: once per month, and within 72 hours after critical conditions. <u>Malibu Lagoon</u> 1. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon: twice per week during high visitation seasons from May 15 through October 15. 2. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon: once per week from October 15 through May 15, and within 72 hours after critical conditions. <u>Malibou Lake</u> Once per month for the waterbody, shorelines and the adjacent lands, and within 72 hours after critical conditions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	Medea Creek Reach 1 (Malibou Lake to confluence with Lindero Creek) Twice per month for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Medea Creek Reach 2 (above confluence) 1. Once per week on the waterbody, shorelines and the adjacent areas from the confluence with Lindero Creek to the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions. 2. Twice per month above the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions. Lindero Creek Reach 1 (Confluence with Medea Creek to Lake Lindero) Twice per month for Lindero Creek Reach 1 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Lindero Creek Reach 2 (Above Lake Lindero) Twice per month for Lindero Creek Reach 2 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Lake Lindero Twice per month for the waterbody, shorelines and the adjacent land, and within 72 hours after critical conditions. Las Virgenes Creek 1. Within the State Parks northerly to the intersection with Mulholland Highway: once per month, and within 72 hours after critical conditions. 2. Once per week for the waterbody, shorelines and the adjacent areas between Mulholland Highway and Juan Bautista De Anza Park at Los Hills Road in the City of Calabasas, and within 72 hours after critical conditions. 3. Twice per week for the waterbody, shorelines and the adjacent areas for the rest of City of Calabasas. 4. Once per month for section in Los Angeles County along Ventura Freeway and within 72 hours after critical conditions. 5. Within Ventura County, once every two months for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. The Executive Officer may approve or require a revised assessment and collection frequency, location, and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary to prevent nuisance or adverse effects on beneficial uses, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	(2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements, an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-31.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in the listed subwatersheds of the Malibu Creek Watershed and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 2136 gallons per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of the listed waterbodies in the Malibu Creek Watershed or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the listed subwatersheds of the Malibu Creek Watershed and on the land area surrounding these subwatersheds, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions in Table 7-31.2a and 7-31.2b may cooperate and coordinate their TMRP activities for Malibu Creek Watershed.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.

Element	Malibu Creek Watershed Trash TMDL
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-31.2a Malibu Creek Watershed Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	One year from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Malibu Creek Watershed. Installation will be prioritized based on the greatest point source loadings.

Table 7-31.2b Malibu Creek Watershed Trash TMDL: Implementation Schedule

Minimum Frequency of Assessment and Collection Program * - Nonpoint Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Six months from TMDL effective date. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
3	Implement MFAC/BMP Program.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.

Task No.	Task	Responsible Jurisdiction	Date
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	One year from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-37 McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 1, 2009.

This TMDL was approved by:

The State Water Resources Control Board on December 14, 2010.
The Office of Administrative Law on May 31, 2011.
The U.S. Environmental Protection Agency on June 30, 2011.

The effective date of this TMDL is: June 30, 2011.

The elements of the TMDL are presented in Table 7-37.1 and the Implementation Plan in Table 7-37.2.

Table 7-37.1. McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	McGrath Lake was placed on the Clean Water Act Section 303(d) list in 1998, 2002, and 2006 as impaired for organochlorine pesticides (chlordane, dieldrin, DDT and derivatives) and polychlorinated biphenyls (PCBs) in sediment and for sediment toxicity. These toxic organic chemicals bind to soil particles, are stored in the fat tissue of exposed organisms, and create long term environmental impairments. Past studies concluded that sediment toxicity in McGrath Lake was likely due to the elevated concentrations of pesticides and PCBs in sediment. Applicable Water Quality Objectives for this TMDL are narrative water quality objectives for Chemical Constituents, Bioaccumulation, Pesticides and Toxicity contained in Chapter 3, the numeric water quality objective for PCBs contained in Chapter 3 and the numeric water quality criteria promulgated in 40 CFR 131 (California Toxics Rule (CTR)). The exposure of the McGrath Lake ecosystem to chlordane, DDT, dieldrin, and PCBs in amounts exceeding the objectives and criteria has impaired the beneficial uses of the lake, including aquatic life uses (rare, threatened or endangered species and estuarine, wildlife, and wetland habitat) and recreation uses (contact and non-contact recreation and commercial and sport fishing).

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Numeric Targets</td><td>Water column targets for PCBs, chlordane, DDT, and dieldrin are based on the CTR water quality criteria for protection of human health (organisms only). These criteria are more stringent than those for the protection of aquatic life and thus will protect both aquatic life and fish consumption beneficial uses. The sediment numeric targets are derived from the Effects Range-Low (ER-Ls) guidelines compiled by the National Oceanographic and Atmospheric Administration (NOAA). The sediment toxicity impairment is addressed by these numeric targets, which are protective of aquatic life in sediment.

<table>
<tr><th>Pollutant</th><th>Water Column Targets (µg/L)</th><th>Sediment Targets (ng/dry g)</th></tr>
<tr><td>Chlordane</td><td>0.00059</td><td>0.5</td></tr>
<tr><td>Dieldrin</td><td>0.00014</td><td>0.02</td></tr>
<tr><td>4,4’-DDT</td><td>0.00059</td><td>1</td></tr>
<tr><td>4,4’-DDE</td><td>0.00059</td><td>2.2</td></tr>
<tr><td>4,4’-DDD</td><td>0.00084</td><td>2</td></tr>
<tr><td>Total DDT</td><td>--</td><td>1.58</td></tr>
<tr><td>Total PCBs</td><td>0.00017</td><td>22.7</td></tr>
</table></td></tr>
<tr><td>Source Analysis</td><td>A source of the pesticide and PCB loading is contaminated surface water and sediments flushing into McGrath Lake from the Central Ditch, which drains agriculture and other lands. All of the contaminants included in this TMDL are legacy pollutants. While they are no longer legally sold or used, they remain ubiquitous in the environment, bound to fine-grained particles. Irrigation and rainfall in the watershed mobilize these particles, which are loaded to McGrath Lake. Surface water (stormwater and agricultural drainage) accounts for almost half of the total recharge of the lake, while groundwater accounts for the rest of the recharge. Pesticides and PCBs have been detected in the surface water inlet to the lake (Central Ditch) but not in the groundwater from local monitoring wells. There are no point sources of pesticides or PCBs to McGrath Lake. Atmospheric deposition may be contributing PCBs.

In addition to external loading, the in-situ sediments are likely a source of contaminants to the lake water column due to the high concentrations of contaminants in the sediment.</td></tr>
<tr><td>Linkage Analysis</td><td>A conceptual model identifies the assimilative capacity of McGrath Lake and links the source loading information to the numeric targets. The chemical properties of the pesticides and PCBs result in strong binding to particulate matter, therefore most of the incoming contaminants from the Central Ditch to the lake are bound to suspended solids. However, pesticide exceedances are observed in the Central Ditch even in low-flow conditions, indicating that some of the contaminants are transported to the lake in the water fraction. Therefore, there are water column and suspended sediment allocations for the Central Ditch.

Once the suspended sediment settles to the lake bottom, desorption is possible due to the high contaminant concentrations, favorable environmental conditions and extended contact time (between the sediment and water). The contaminated lake sediments are toxic to benthic organisms and may also be taken up through bioturbation and feeding processes. Therefore, both external loading sources from the lake subwatershed and internal loading from contaminated lake sediments are assigned load allocations.</td></tr>
</table>

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Load Allocations</td><td>
Load allocations (LAs) addressing non-point sources of pesticides and PCBs are assigned to discharges from the Central Ditch to the lake and internal sources from the lake sediments. The lake sediments are defined as bed sediments in the main body of the lake and the riparian corridor west of Harbor Boulevard.
The in-lake LAs are for concentrations in sediment only.
<table>
<tr><td>Pollutant</td><td>Load Allocation for Concentration in Lake Sediment (µg/dry kg)</td></tr>
<tr><td>Chlordane</td><td>0.5</td></tr>
<tr><td>Dieldrin</td><td>0.02</td></tr>
<tr><td>4,4’-DDT</td><td>1</td></tr>
<tr><td>4,4’-DDE</td><td>2.2</td></tr>
<tr><td>4,4’-DDD</td><td>2</td></tr>
<tr><td>Total DDT</td><td>1.58</td></tr>
<tr><td>Total PCBs</td><td>22.7</td></tr>
</table>
The Central Ditch LAs are for concentrations in both suspended sediment and water.
<table>
<tr><td>Pollutant</td><td>Water Column Load Allocation (µg/L)</td><td>Load Allocation for Concentration in Suspended Sediment (µg/dry kg)</td></tr>
<tr><td>Chlordane</td><td>0.00059</td><td>0.5</td></tr>
<tr><td>Dieldrin</td><td>0.00014</td><td>0.02</td></tr>
<tr><td>4,4’-DDT</td><td>0.00059</td><td>1</td></tr>
<tr><td>4,4’-DDE</td><td>0.00059</td><td>2.2</td></tr>
<tr><td>4,4’-DDD</td><td>0.00084</td><td>2</td></tr>
<tr><td>Total DDT</td><td>--</td><td>1.58</td></tr>
<tr><td>Total PCBs</td><td>0.00017</td><td>22.7</td></tr>
</table>
</td></tr>
<tr><td>Margin of Safety</td><td>The uncertainties associated with this TMDL are due to limited data on the amount and media by which PCBs and pesticides are entering the lake and the extent to which these contaminants are already in the lake. The seasonal and annual variability in the hydrologic budget also creates uncertainty. To address these uncertainties, an implicit margin of safety is applied. Conservative assumptions were used to calculate the loading to the lake and more the protective ER-L sediment quality guidelines were used for the sediment numeric targets.</td></tr>
</table>

TMDL Element	Regulatory Provisions
Seasonal Variations and Critical Conditions	As the contaminants of concern for this TMDL are transported to the lake by the mobilization of sediment, it is expected that the greatest influx of PCBs and pesticides occurs during periods of increased runoff from the watershed. Due to the artificial interference in the watershed hydrologic cycle due to agricultural activities, peak runoff may not correspond to the southern California wet season. Seasonal variations and critical conditions are addressed by the use of concentration-based load allocations. However, due to the bioaccumulative properties of the pollutants, effects occur over extended time periods, which minimizes the importance of seasonal variations.
Monitoring	**Monitoring Program** The monitoring program shall measure the progress of pollutant load reductions and improvements in water and sediment quality. The monitoring program shall: • Determine attainment of numeric targets for PCBs and pesticides; • Determine compliance with the load allocations for PCBs and pesticides; and • Monitor the effect of implementation actions on lake water and sediment quality. The monitoring program shall consist of two phases. The first phase will focus on sampling the Central Ditch (for the first 10 years of the TMDL implementation schedule) and will be conducted by the responsible parties for the Central Ditch LAs. For the remaining portion of the TMDL implementation schedule, required water and sediment samples will be collected from the Central Ditch by "responsible parties" for the Central Ditch LAs, while required water and sediment samples will be collected from the lake as prescribed by the McGrath Lake Work Plan (MLWP) developed pursuant to a Memorandum of Agreement (MOA) entered into by and between "cooperative parties" and the Regional Board. The "responsible parties" and "cooperative parties" are defined in the implementation section below. Phase 1 Phase 1 requires the development of a monitoring and reporting plan (MRP) to comply with the TMDL requirements. The MRP shall propose a monitoring frequency for water and sediment sampling that will characterize the variability in water and sediment quality observed in the Central Ditch. Water samples will be analyzed for the following constituents: • Total Organic Carbon • Total Suspended Solids • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane

TMDL Element	Regulatory Provisions
Monitoring (continued)	Sediment samples will be analyzed for the following constituents: • Total Organic Carbon • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane The annual monitoring reports will summarize proposed changes to the MRP based on the results of the previous year's monitoring. Sampling frequency may be reduced during future years once characterization of the variability in water and sediment quality has been achieved. In addition to the constituents above, general water chemistry (temperature, dissolved oxygen, pH and electrical conductivity) and a flow measurement will be required at each sampling event. Responsible parties for phase 1 monitoring shall submit a MRP plan to assess compliance with LAs and a Quality Assurance Project Plan (QAPP). The MRP and QAPP must be submitted to the Executive Officer for approval within six months of the effective date of the TMDL. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples shall be collected in accordance with Surface Water Ambient Monitoring Program (SWAMP) protocols, where available or alternative protocols proposed by dischargers and approved by the Executive Officer. Monitoring shall begin 90 days after the Executive Officer has approved the MRP and QAPP. At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. As analytical methods and detection limits continue to improve (i.e. development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new analytical methods with lower detection limits in the MRP and the QAPP. A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year. <u>Phase 2</u> The sampling, analysis and flow measurements begun in Phase 1 will continue. Additionally, samples will be collected from within the lake. Water column and surficial sediment (top 2 cm) samples will be collected at the northern end of the lake and from the deepest portion of the lake. All samples will be collected in accordance with SWAMP protocols. Cooperative parties shall only commence, participate or fund the Phase 2 monitoring as provided in the MLWP.

TMDL Element	Regulatory Provisions
Monitoring (continued)	Water samples will be analyzed for the following constituents: • Total Organic Carbon • Total Suspended Solids • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane Sediment samples will be analyzed for the following constituents: • Total Organic Carbon • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane • Toxicity (if toxicity is determined, a TIE shall be completed to elucidate the cause of the toxicity) Samples from the lake will be collected annually. The annual reports required for Phase 1 will continue during Phase 2. Additional monitoring may be required depending on which implementation option is chosen. Three years from the effective date of the TMDL, cooperative parties must submit the MLWP as discussed in the implementation section below. At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. All required monitoring under Phase 1 and Phase 2 shall incorporate new analytical methods, once commercially available with lower detection limits, in the MRP and the QAPP. A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year.
Implementation Plan	Compliance with this TMDL will require the elimination of pollutant loads in toxic amounts from the Central Ditch to the lake and identification and implementation of strategies to remediate the contaminated sediments at the bottom of the lake. Table 7-37.2 contains a schedule for cooperative parties to implement a MOA to jointly develop the MLWP to implement strategies to remediate the contaminated lake sediments and achieve lake sediment load allocations. I. Implementation and Determination of Compliance with the Central Ditch LAs for Agricultural Non-point Source Discharges The Central Ditch load allocations assigned to agriculture non-point source dischargers will be implemented through the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) or other appropriate Regional Board Orders. The load allocations for the Central Ditch shall be incorporated into the Conditional Waiver or other appropriate Regional Board Orders.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	It is likely that a combination of implementation measures will be needed to achieve the LAs. The Central Ditch implementation actions may include, but are not limited to the following: • On-Farm BMPs • Regional Sub-Watershed BMPs • Regional Treatment System • Redirect Agriculture Discharge The estimated costs for on-farm BMPs such as buffer crops, filter strips, and sedimentation basins are approximately \$373/acre of BMP, \$1002/acre of BMP, and \$10,000/acre of BMP, respectively. The estimated costs for regional sub-watershed BMPs, such as converting the Central Ditch to a grassed waterway or converting the dirt road that runs along the Central Ditch into a filter strip, are approximately \$1,288/ per acre of BMP and \$1002/per acre of BMP, respectively. The estimated cost of a regional treatment system to address the Central Ditch water is about \$151,536/year. The estimated costs to redirect the agriculture discharge toward a nearby canal are \$612,611 (open ditch) to \$1,287,402 (piped diversion). Potential sources of financing for these implementation alternatives, such as Clean Water Act section 319(h) grant funding, are discussed in Chapter 4. As discussed in Chapter 4, the U.S. Department of Agriculture Soil Conservation Service and the Resource Conservation Districts provide information on, and assistance in, implementing BMPs. Agricultural Dischargers will be considered in compliance with the TMDL LAs if they comply with all provisions of the Conditional Waiver established to implement the LAs , or those of any alternative regulatory order, if any, that may be established to implement the LAs in lieu of the Conditional Waiver. II. Implementation of Memorandum of Agreement to Develop McGrath Lake Work Plan and Determination of Compliance with LAs for Contaminated Lake Sediments The contaminated lake sediment LAs may be implemented through a MOA, which the Executive Officer is authorized to negotiate and execute, provided it is consistent with the following: The MOA shall detail the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall comply with the <u>Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options</u> ("Policy"), including part II, section 2 (c)(ii) and related provisions, and shall be consistent with the requirements of this TMDL. If the MOA is timely adopted in accordance with the implementation schedule below, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of Policy section 2 (e). The MOA shall include development of the MLWP, which must be approved by the Executive Officer, and may be amended with Executive Officer approval, as necessary. Implementation of the MOA shall be reviewed annually by the Executive Officer as part of the MRP annual reports.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	The purpose of the MOA is not to create evidence of responsibility or ascertain legal liability for subsequent remediation of the lake sediments, but rather to organize stakeholders who have an interest in the remediation of the lake sediments. To be a valid non-regulatory implementation program adopted by the Regional Board, the MOA shall include the following requirements and conditions: • The MOA shall direct development of a MLWP that addresses the impaired waterbody as approved by the Executive Officer. • The MOA shall outline the roles and responsibilities of the Regional Board and each cooperative party. • The MOA shall contain conditions that require trackable progress on attaining load allocations and numeric targets. A timeline shall be included that identifies the point(s) at which Regional Board regulatory intervention and oversight will be triggered if the pace of work lags or fails. • The MOA shall contain a provision that it shall be revoked based upon findings that the program has not been adequately implemented, is not achieving its goals, or is no longer adequate to restore water quality. • The MOA shall be consistent with the California Policy for Implementation and Enforcement of the Non-point Source Pollution Control Program, including but not limited to, the "Key Elements of a Non-point Source Pollution Control Implementation Program". Pursuant to the terms of the MOA, the cooperative parties and the Regional Board will work jointly to develop the MLWP and remediate the lake sediments. The purpose of the MLWP is to set forth strategies to achieve lake sediment load allocations in a manner that is beneficial to subwatershed landowners and the public in general. To the satisfaction of the Executive Officer, the MLWP shall meet the following criteria: • Three years from the effective date of the TMDL cooperative parties shall submit a MLWP for approval by the Executive Officer. • The MLWP shall include identification of implementation measures that will achieve lake sediment LAs. • The MLWP shall include any additional monitoring needed to assess the effectiveness of the MLWP's chosen implementation strategies. • The MLWP shall include a MRP and QAPP for phase 2 monitoring. • The MLWP shall include a strategy to secure funds necessary to remediate the lake sediments and achieve lake sediment allocations.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	• The MLWP shall include tasks and a clear timeline for task completion leading to attainment of lake sediment LAs. The roles and responsibilities of each cooperative party shall also be outlined in the MLWP. • The MLWP shall consider and address the potential impacts of lake sediment remediation strategies on the implementation of the McGrath Beach Bacteria TMDL and ongoing restoration efforts at McGrath State Beach. • The MLWP shall achieve compliance with the load allocations through the implementation of lake management strategies to reduce and manage internal pesticide and PCBs sources from lake bed sediments. The lake management implementation actions may include: • Sediment Capping; • Dredging/Hydraulic Dredging; • Monitored Natural Attenuation; or • Other appropriate means of implementation. The Executive Officer may require a revised MLWP to reflect the results of data obtained through TMDL implementation. III. APPLICATION OF ALLOCATIONS A. Responsible parties for the Central Ditch LAs are the agricultural dischargers in the McGrath Lake sub-watershed. B. Responsible parties for the lake sediment LAs have not yet been identified. Instead, cooperative parties for the lake sediment LAs are identified, not as responsible parties or as dischargers, but as landowners in the subwatershed who may execute a MOA jointly with the Regional Board for the development of the MLWP so that lake sediment allocations can be achieved in a manner that is in the best interest of both the subwatershed landowners and the public in general. Cooperative parties for the lake sediment LAs include: • State of California Department of Parks and Recreation • McGrath Family (owners of the Central Ditch west of Harbor Blvd and the northern end of the lake) • Agricultural Landowners in the McGrath Lake sub-watershed • Ventura Regional Sanitation District (Bailard Landfill)

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	If a MOA is not established by and between cooperative parties and the Regional Board within two years of the effective date of the TMDL, or the cooperative parties do not comply with the terms of the MOA, or if the MOA and MLWP are not implemented or otherwise do not result in attainment of load allocations consistent with the provisions and schedule of the TMDL, the Executive Officer shall initiate an investigation, with input from current landowners, to (1) identify the responsible parties, whether named in this TMDL or not, whose discharges of the legacy pollutants have caused or contributed to the impairment of the lake; (2) ascertain the whereabouts and capacities of those responsible parties and/or their successors; (3) determine the parties to whom responsibility for remediation of sediments should be assigned; and (4) issue appropriate regulatory orders to those responsible parties. In addition, a comprehensive review of the MOA by the Executive Officer shall take place five years from the effective date of the MOA. The purpose of this review is to ensure adequate progress pursuant to the timeline established in the MOA on development of the MLWP and ultimately attainment of the lake sediment load allocations. If the Executive Officer determines that adequate progress has not been made, the Regional Board shall initiate the investigation described above. If the Executive Officer is unable to identify the responsible parties per the investigations above, then the TMDL shall be reconsidered.

Table 7-37.2 McGrath Lake PCBs and Pesticides TMDL: Implementation Schedule

Task Number	Task	Deadline
1	Responsible parties assigned Central Ditch LAs shall submit a Monitoring and Reporting Plan (MRP) to the Executive Officer for review and approval to address Phase 1 monitoring.	6 months from the effective date of the TMDL
2	Responsible parties assigned Central Ditch LAs shall begin monitoring as outlined in the approved MRP.	90 days from the date of MRP approval
3	Responsible parties assigned Central Ditch LAs shall submit annual monitoring reports. Reports shall be submitted within three months after the completion of the final sampling event of the year.	Annually
4	Cooperative parties shall enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the lake sediment LAs.	Two years from the effective date of the TMDL
5	Parties subject to the MOA shall submit a McGrath Lake Work Plan (MLWP) for review and approval by the Executive Officer.	Three years from the effective date of the TMDL
6	Parties subject to the MOA shall submit annual progress reports.	Annually from the date of MLWP approval
7	Responsible parties shall attain Central Ditch LAs.	10 years from the effective date of the TMDL
8	Begin implementation of McGrath Lake sediment remediation actions based on MLWP.	As soon as possible, but no later than 10 years from the effective date of the TMDL
9	Phase 2 monitoring shall begin as outlined in the MLWP. The results shall be included as part of the annual progress reports initiated in Task 6.	To be determined based on MLWP.
10	Lake sediment LAs shall be achieved.	14 years from the effective date of the TMDL