

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

TENTATIVE RESOLUTION NO. R9-2012-0033

**A RESOLUTION AMENDING
THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO
INCORPORATE THE TOTAL MAXIMUM DAILY LOAD FOR
SEDIMENTATION IN LOS PEÑASQUITOS LAGOON**

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

- 1. Water Quality Control Plan:** The federal Clean Water Act¹ (CWA) and state Porter-Cologne Water Quality Control Act² require the San Diego Water Board to establish water quality standards for each waterbody within its region. The water quality standards for coastal waters in the San Diego Region are established in the *Water Quality Control Plan for the San Diego Basin (9)* (Basin Plan) and in the *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan). Water quality standards include beneficial uses, water quality objectives (WQOs), and the antidegradation policy. The Basin Plan contains programs of implementation to achieve water quality standards.³ Waterbodies that do not meet water quality standards are considered impaired.
- 2. Clean Water Act Section 303(d) List of Water Quality Limited Segments:** Pursuant to section 303(d) of the Clean Water Act, each state is required to identify impaired waters and establish a total maximum daily load (TMDL) at a level necessary to implement the applicable water quality standards.⁴ Each state is required to develop a list that identifies and establishes a priority ranking for those waters requiring TMDLs.⁵ The list is known as the CWA section 303(d) List of Water Quality Limited Segments or more commonly, the 303(d) List. For the specific purpose of developing information, states are also required to estimate TMDLs for all other waters that are not identified on the 303(d) List.⁶

¹ Clean Water Act section 303; U.S. Code section 1313

² California Water Code section 13240

³ See Water Code section 13050(j). A "Water Quality Control Plan" or "Basin Plan" consists of a designation or establishment for the waters within a specified area of all of the following: (1) Beneficial uses to be protected, (2) Water quality objectives and (3) A program of implementation needed for achieving water quality objectives.

⁴ Clean Water Act section 303(d)(1)(C); U.S. Code section 1313(d)(1)(C)

⁵ Code of Federal Regulations Title 40 section 130.7(b)(1)

⁶ Clean Water Act section 303(d)(3) states that "For the specific purpose of developing information, each State shall identify all waters within its boundaries, which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the total maximum daily load with seasonal variations and margin of safety..."

- 3. Purpose and Definition of Total Maximum Daily Load (TMDL):** The purpose of a TMDL is to restore an impaired waterbody to water quality conditions under which applicable water quality standards can once again be attained. This is done by establishing and implementing a TMDL for the impairing pollutant. Generally, when the TMDL, numeric targets and associated pollutant allocations are attained, water quality standards in the waterbody should be restored. A TMDL is both (1) a calculation of the maximum loading capacity of the impaired waterbody for each impairing pollutant; and (2) an implementation plan to guide actions necessary to cleanup the waterbody and restore water quality standards.
- 4. TMDL Basin Plan Amendment:** Upon establishment and approval of TMDLs, the state is required to incorporate TMDLs into the state water quality management plan.⁷ Along with various applicable statewide water quality control plans, the Basin Plan for the San Diego Region serves as the water quality management plan for the watersheds under the jurisdiction of the San Diego Water Board. Incorporating TMDLs into the Basin Plan requires an amendment to the Basin Plan and the development of an Implementation Plan. The Implementation Plan must include a description of the actions necessary to achieve the applicable water quality objectives, a time schedule for the actions to be taken, and a description of the monitoring to be undertaken to determine compliance with the objectives.⁸
- 5. Water Quality Impairment of Los Peñasquitos Lagoon:** As required by CWA section 303(d), the Los Peñasquitos Lagoon (Lagoon) was placed on the 1996 List of Water Quality Limited Segments due to sedimentation and siltation loads that exceeded water quality objectives. The beneficial uses that are most sensitive to increased sedimentation are estuarine habitat and preservation of biological habitats of special significance. Deposition of watershed sediment contributes to elevation increases within the Lagoon, which is a critical variable that determines the productivity and stability of these uses. Other beneficial uses listed in the Basin Plan for the Lagoon include contact water recreation, non-contact water recreation, wildlife habitat, rare, threatened or endangered species, marine habitat, migration of aquatic organisms, spawning, reproduction and/or early development, and shellfish harvesting.

Other impacts associated with increased and rapid sedimentation include: reduced tidal mixing within Lagoon channels, increased vulnerability to flooding for surrounding urban and industrial developments, increased turbidity associated with siltation in Lagoon channels, and constricted wildlife corridors.

⁷ Code of Federal Regulations Title 40 section 130.6(c)(1)

⁸ Pursuant to the requirements of Article 3, commencing with section 13240, of Chapter 4 of the Porter-Cologne Water Quality Control Act, as amended, codified in Division 7, commencing with section 13000, of the Water Code

- 6. Water Quality Objective:** The water quality objective for sediment is contained in the Basin Plan. The Basin Plan states, *“The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.”*
- 7. Numeric Targets:** One or more quantitative numeric targets must be selected to calculate a TMDL for an impaired waterbody. Numeric targets are derived from and must be able to interpret and implement water quality standards (beneficial uses, water quality objectives, and the antidegradation policy). This means that attainment of the selected numeric targets in the impaired waterbody represents attainment of applicable water quality standards in the waterbody; i.e., when the numeric targets are met, the TMDL should be met, WQOs should be met and the beneficial uses should be restored. While numeric targets and TMDLs are derived from, represent, interpret, and implement water quality standards, they are not water quality standards.

The narrative sediment water quality objective requires numeric targets to evaluate attainment of the objective. Consideration of various lines of evidence indicates that the Lagoon was likely achieving the water quality standard for sediment in the mid-1970s. Using land-use coverage and Lagoon mapping, a “reference condition” was developed to establish watershed and Lagoon conditions present during the mid-1970s.

The historic land use distribution was used to calculate the watershed numeric target, which is expressed as 12,360 tons of sediment per wet period (211 days) or 58.6 tons per day. Lagoon mapping was used to establish the Lagoon numeric target, which is expressed as an increasing trend in the total area of tidal saltmarsh and non-tidal saltmarsh toward 346 acres. This target acreage represents 80 percent of the total acreage of tidal and non-tidal saltmarsh present in 1973. As of the year 2010, 262 acres of tidal saltmarsh and non-tidal saltmarsh are present in the Lagoon.

- 8. Sources of Sediment:** Sources of sediment to the Lagoon include erosion of canyon banks, bluffs, scouring stream banks, and tidal influx. Some of these processes are exacerbated by anthropogenic disturbances, such as urban development within the watershed. Urban development transforms the natural landscape by converting pervious surfaces to impervious surfaces, which increases the volume and velocity of runoff resulting in scouring of sediment, primarily below storm water outfalls that discharge into canyon areas. Sediment loads are transported downstream to the Lagoon during storm events causing deposits on the salt flats and in Lagoon channels. These sediment deposits have gradually built-up over the years due to increased sediment loading and inadequate flushing, which directly and indirectly affects Lagoon functions and salt marsh characteristics.

- 9. Watershed Point and Non-point Sediment Sources:** There are two broad categories of sediment sources to the Lagoon: 1) watershed sources, and 2) the Pacific Ocean. The watershed sources consist of all point and non-point sources of sediment in the watershed area draining to Los Peñasquitos Lagoon. The total sediment contribution from all watershed sources is presented as the total wasteload allocation (WLA). The sediment contributions from the Pacific Ocean are considered a background source and are presented as the Load Allocation (LA). Hence, the responsible parties are assigned the total WLA and are jointly responsible for meeting the wasteload reductions required in this TMDL project.
- 10. Responsible Parties Identification:** Responsible parties include the following: Phase I Municipal Separate Storm Sewer Systems (MS4s) copermitees (the County of San Diego, City of San Diego, City of Del Mar, and City of Poway), Phase II MS4 permittees, Caltrans, general construction storm water National Permit Discharge Elimination System (NPDES) permittees, and general industrial storm water NPDES permittees.
- 11. Linkage Analysis:** Reducing watershed sediment loads from the year 2000 levels to historic levels is a necessary component for restoring and providing long-term protection of the Lagoon's beneficial uses. Deposition of watershed sediment contributes to elevation increases within the Lagoon, leading to an increase in height relative to mean sea level. Elevation is a critical variable that determines the productivity and stability of saltmarshes. The long-term existence of the saltmarsh depends on the success of the dominant plants, such as *Sarcoconia pacifica* (also referred to as *Salicornia virginica*) and *Frankenia salina*, and their close relationship to sediment supply, sea level change, and tidal range.

Reduced sediment loading consistent with the watershed numeric target will encourage the establishment of native vegetation in degraded areas. To represent the linkage between source contributions and receiving water response, models were developed to simulate source loadings and transport of sediment into the Lagoon. The models provide an important tool to evaluate year 2000 conditions, to evaluate historic conditions, and to calculate TMDL load reductions.

The Lagoon was capable of assimilating these historic sediment loads under historic Lagoon conditions. Because the Lagoon has evolved through time and accumulated over 40 years of watershed sediment loads, it cannot be assumed that the Lagoon, in the year 2010 conditions, can assimilate the same historic sediment loads. Evaluation of the extent of vegetation types in the Lagoon provides the necessary tool to assess how the Lagoon responds to watershed sediment load reductions and to establish a target Lagoon condition under which the Lagoon can again assimilate the historic sediment loads.

12. TMDL Allocations and Reductions:Wasteload Allocations to Watershed = 1,962 tons/year

As the primary point source to the Lagoon, a wasteload allocation (WLA) of 1,962 tons/year was assigned to the responsible parties. A 75 percent sediment load reduction from the Year 2000 load to the historical (mid-1970s) load is required of the responsible parties.

Load Allocations to Ocean = 9,780 tons/year

The ocean is a nonpoint source of sediment to the Lagoon and was assigned a load allocation (LA) of 9,780 tons/year. Because the ocean is a natural background source, load reductions are not required of the ocean.

Margin of Safety = 618 tons/year

An explicit margin of safety (MOS) of 5 percent accounts for model uncertainties arising from acquiring representative total suspended solid, bank erosion, and bed load transport data.

13. TMDL Implementation, Monitoring, and Compliance: The Responsible Parties must develop a Load Reduction Plan that will establish a watershed-wide, programmatic, adaptive management approach for implementation. The plan will include a detailed description of implementation actions, as identified and planned by the responsible parties, to meet the requirements of this TMDL. All responsible parties are responsible for reducing their sediment loads to the receiving waterbody or demonstrating that their discharges are not causing exceedances of the wasteload allocation.

Monitoring is required to assess progress towards achieving the wasteload and load allocations and numeric targets. Furthermore, the monitoring program must be capable of monitoring the effectiveness of implementation actions to improve water quality and saltmarsh habitat and remediation actions to remove sediment from the Lagoon.

Full implementation of the TMDL for sediment must be completed within 20 years from the effective date of the Basin Plan amendment. This timeline takes into consideration the planning needs of the responsible parties and other stakeholders to establish a Load Reduction Plan, time needed to address multiple impairments, and provides adequate time to measure temporal disparities between reductions in upland loading and the corresponding Lagoon water quality response.

14. Scientific Peer Review: The scientific basis for this TMDL has undergone external peer review pursuant to Health and Safety Code section 57004. The San Diego Water Board has considered and responded to all comments submitted by the peer review panel and has enhanced the Staff Report appropriately. As a result of the peer review process, changes were made to the TMDL including inclusion of an explicit margin of safety and revision of the adaptive management approach.

- 15. California Environmental Quality Act Requirements:** Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the San Diego Water Board's basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, section 21000 et seq.) requirements for preparing environmental documents [14 CCR 15251(g); 23 CCR 3782]. As such, the "substitute environmental documents" that support the San Diego Water Board's proposed basin planning action contain the required environmental documentation under CEQA [23 CCR 3777]. The substitute environmental documents include the environmental checklist, the detailed Staff Report, peer review and public comments and responses to comments, this resolution, and the Basin Plan Amendment. For CEQA purposes, the "project" is the adoption of a Basin Plan amendment establishing a TMDL for sediment in the Lagoon. The CEQA checklist and other portions of the substitute environmental documents contain significant analysis and numerous findings related to impacts.
- 16. Program and Project-Level CEQA Analysis:** In preparing the substitute environmental documents, the San Diego Water Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, Title 14, section 15187, and intends those documents to serve as a tier 1 environmental review. This analysis is not intended to be an exhaustive analysis of every conceivable impact, but an analysis of the reasonably foreseeable consequences of the adoption of this regulation, from a programmatic perspective. The "Lead" agencies for tier 2 projects will assure compliance with project-level CEQA analysis of this programmatic project. Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2.
- 17. CEQA Findings:** The proposed Basin Plan amendment could have a potentially significant adverse effect on historical, archaeological, and paleontological resources. There are feasible alternatives, feasible mitigation measures, or both, that if employed, would substantially lessen the potentially-significant adverse impacts identified in the substitute environmental documents; however such alternatives or mitigation measures are within the responsibility and jurisdiction of other public agencies, not the San Diego Water Board. California Water Code section 13360 precludes the San Diego Water Board from dictating the manner in which responsible parties comply with any of the San Diego Water Board's regulations or orders. When the parties responsible for implementing this TMDL determine how they will proceed, the parties responsible for those parts of the project can and should incorporate such alternatives and mitigation into any subsequent projects or project approvals. These feasible alternatives and mitigation measures are described in more detail elsewhere in the substitute environmental documents (14 CCR 15091(a)(2)). Where any subsequent project require approval by the San Diego Water Board, the San Diego Water Board will include sufficient mitigation measures to substantially lessen the potentially significant adverse impacts.

18. Statement of Overriding Consideration: To the extent significant adverse environmental effects could occur, the San Diego Water Board has balanced the economic, legal, social, technological, and other benefits of the TMDL against the unavoidable environmental risks and finds that specific economic, legal, social, technological, and other benefits of the TMDL outweigh the unavoidable adverse environmental effects, such that those effects are considered acceptable. The basis for this finding is more fully set forth in the substitute environmental documents (14 CCR section 15093).

19. Economic Analysis: The San Diego Water Board has considered the costs of the reasonably foreseeable methods of compliance with the load and wasteload allocations specified in this TMDL. The most reasonably foreseeable methods of compliance involve implementation of structural and non-structural controls. Surface water monitoring will be necessary to evaluate the effectiveness of these controls.

20. Necessity Standard [Government Code section 11353(b)]: Amendment of the Basin Plan to establish and implement the sediment TMDL for the Lagoon is necessary because the existing water quality in the Lagoon does not meet applicable water quality objectives for sediment. Clean Water Act section 303(d) requires the establishment and implementation of a TMDL under the water quality conditions that exist at the Lagoon. The TMDL for sedimentation is necessary to promote attainment of applicable water quality objectives and restoration of water quality needed to support the beneficial uses designated for the Lagoon.

21. Stakeholder & Public Participation: Interested persons and the public have had reasonable opportunity to participate in review of the proposed TMDL. Efforts to solicit public review and comment included a public workshop and CEQA scoping meeting on February 15, 2011, multiple meetings with the Stakeholder Advisory Group, a public review and comment period consisting of 46 days, and a public hearing on May 9, 2012. Notices for all meetings were sent to interested parties including cities and counties with jurisdiction in the Los Peñasquitos watershed. All of the written comments submitted to the San Diego Water Board during the review and comment periods have been considered.

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

NOW, THEREFORE, BE IT RESOLVED THAT

1. **Environmental Documents Certification:** The substitute environmental documents prepared pursuant to Public Resources Code section 21080.5 are hereby certified, and the Executive Officer is directed to file a Notice of Decision with the Resources Agency after State Water Resources Control Board (State Water Board), and Office of Administrative Law (OAL) approval of the Basin Plan amendment, in accordance with section 21080.5(d)(2)(E) of the Public Resources Code and the California Code of Regulations, Title 23, section 3781.
2. **Amendment Adoption:** The San Diego Water Board hereby adopts the attached Basin Plan amendment as set forth in Attachment A hereto to establish a sediment TMDL for the Lagoon.
3. **Agency Approvals:** The Executive Officer is directed to submit this Basin Plan amendment to the State Water Board in accordance with Water Code section 13245.
4. **Non-Substantive Corrections:** If, during the approval process for this amendment, the San Diego Water Board, the State Water Board, or the OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the San Diego Water Board of any such changes.

I, David W. Gibson, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Diego Region, on May 9, 2012.

TENTATIVE

David W. Gibson
Executive Officer

ATTACHMENT A TO RESOLUTION NO. R9-2012-0033

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE THE SEDIMENT TOTAL MAXIMUM DAILY LOAD (TMDL) FOR LOS PEÑASQUITOS LAGOON

This Basin Plan amendment establishes a sediment Total Maximum Daily Load (TMDL) and associated load and wasteload allocations for Los Peñasquitos Lagoon (Lagoon). This amendment includes a program to implement the TMDL and monitor its effectiveness. Chapters 2, 3, and 7 of the Basin Plan are amended as follows:

Chapter 2, *Beneficial Uses*

Table 2-3. *Beneficial Uses of Coastal Waters*

Consecutively number and add the following footnote to Los Peñasquitos Lagoon in Table 2-3:

Los Peñasquitos Lagoon is designated as a water quality limited segment for sediment pursuant to Clean Water Act section 303(d). A Total Maximum Daily Load has been adopted to address this impairment. See Chapter 3, *Water Quality Objectives*, section entitled “Water Quality Objectives for Sediment.” See also Chapter 7, *Total Maximum Daily Loads*, section entitled “Sediment Total Maximum Daily Load for Los Peñasquitos Lagoon.”

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

Chapter 3, *Water Quality Objectives*

Water Quality Objectives for Sediment:

Add a second paragraph as follows:

Los Peñasquitos Lagoon is designated as an impaired water body for sediment pursuant to Clean Water Act section 303(d). A Total Maximum Daily Load has been adopted to address this impairment. See Chapter 2, *Beneficial Uses Table 2-3. Beneficial Uses of Coastal Waters*, Los Peñasquitos Lagoon, Hydrologic Unit Basin Number 6.10. See also Chapter 7, *Total Maximum Daily Loads*, section entitled “Sediment Total Maximum Daily Load for Los Peñasquitos Lagoon.”

Chapter 7, *Total Maximum Daily Loads*

On [insert date], the San Diego Water Board adopted ***Resolution No. R9-2012-0033, A Resolution Amending the Water Quality Control Plan For The San Diego Basin (9) to Incorporate the Sediment Total Maximum Daily Load for Los Peñasquitos Lagoon***. The TMDL Basin Plan Amendment was subsequently approved by the State Water Resources Control Board (State Board) on [Insert date], the Office of Administrative Law (OAL) on [Insert date], and the USEPA on [Insert date]. For purposes of state law, Resolution No. R9-2012-0033 became effective following OAL approval on [Insert date],

Technical TMDL Analysis

Component	Key Findings and Regulatory Provisions
<i>Problem Statement</i>	Under section 303(d) of the Clean Water Act (CWA), states are required to identify waters whose beneficial uses have been impaired due to specific constituents. Los Peñasquitos Lagoon was placed on the Section 303(d) list of Water Quality Limited Segments in 1996 for sedimentation and siltation with an estimated 469 acres affected. The Lagoon is subject to the development of a total maximum daily load (TMDL) (US EPA, 2009). The Lagoon is an estuarine system that is part of the Torrey Pines State Natural Reserve. In addition to its marine influence, the Lagoon receives freshwater inputs from an approximately 60,000-acre watershed comprised of three major canyons (Carroll Canyon, Los Peñasquitos Canyon, and Carmel Canyon). Given the status of “Natural Preserve” by the California State Parks, the Lagoon is one of the few remaining native saltmarsh lagoons in southern California, providing a home to several endangered species (California State Parks, 2009). The Lagoon is ecologically diverse, supporting a variety of plant species, and provides nursery grounds and habitat for numerous bird, fish, and small mammal populations. The Lagoon also serves as a stopover for the Pacific Flyway, offering migratory birds a safe place to rest and feed, as well as providing refuge for coastal marine species that use the Lagoon to feed and hide from predators. The San Diego Basin Plan states, “The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.” Beneficial uses listed in the Basin Plan for the Lagoon include contact water recreation; non-contact water recreation (although access is not permitted in

Component	Key Findings and Regulatory Provisions
	some areas per California State Parks); preservation of biological habitats of special significance; estuarine habitat; wildlife habitat; rare, threatened or endangered species; marine habitat; migration of aquatic organisms; spawning, reproduction and/or early development; and shellfish harvesting. The beneficial uses that are most sensitive to increased sedimentation are estuarine habitat (EST) and preservation of biological habitats of special significance (BIOL). Estuarine uses may include preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (such as marine mammals or shorebirds). Impacts associated with increased and rapid sedimentation include: reduced tidal mixing within Lagoon channels, degraded and (in some cases) net loss of saltmarsh vegetation, increased vulnerability to flooding for surrounding urban and industrial developments, increased turbidity associated with siltation in Lagoon channels, and constricted wildlife corridors. The Los Peñasquitos Lagoon Enhancement Plan and Program (1985), San Diego Basin Plan, and Clean Water Act section 303(d) highlight sedimentation as a significant impact associated with urban development and a leading cause in the rapid loss of saltmarsh habitat in the Lagoon. Sediment reduction is a management priority. The Lagoon's 565 acres include 262 acres of tidal saltmarsh (including salt panne, tidal channels, and mudflats) and non-tidal saltmarsh and 132 acres of freshwater marsh, herbaceous wetland, and woody riparian (for example southern willow scrub and mulefat scrub) habitats. The remaining 171 acres of saltmarsh and brackish marsh vegetation are impaired by excessive sedimentation, which converted the coastal saltmarsh to <i>Lolium perenne</i> infested non-tidal saltmarsh, freshwater marsh, and woody riparian habitats. (California State Parks, 2011) The environmental processes that support wetland habitats in the Lagoon have been altered by urban development in three ways: 1) Increase in the volume and frequency of freshwater input, 2) Increase in sediment deposition, and 3) Decrease in the tidal prism. These factors have led to decreases in tidal and non-tidal saltmarsh habitats and increases in freshwater habitats and the abundance of non-native species.

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Component	Key Findings and Regulatory Provisions
Linkage Analysis	There are two broad categories of sediment sources to the Lagoon: 1) watershed sources, and 2) the Pacific Ocean. The watershed sources consist of all of point and non-point sources of sediment in the watershed area draining to Los Peñasquitos Lagoon. The total sediment contribution from all watershed sources is presented as the total wasteload allocation (WLA). The sediment contributions from the Pacific Ocean are considered a background source and are presented as the Load Allocation (LA). Hence, the responsible parties were assigned the total WLA and are jointly responsible for meeting the wasteload reductions required in this TMDL project. <u>Responsible Parties</u> Responsible parties include the following: Phase I Municipal Separate Storm Sewer Systems (MS4s) copermitees (the County of San Diego, City of San Diego, City of Del Mar, and City of Poway), Phase II MS4 permittees, Caltrans, general construction storm water NPDES permittees, and general industrial storm water NPDES permittees. <u>Linkage Analysis</u> Reducing watershed sediment loads from the year 2000 levels to historic levels is a necessary component for restoring and providing long-term protection of the Lagoon's beneficial uses. Deposition of watershed sediment contributes to elevation increases within the Lagoon, leading to an increase in height relative to mean sea level. Elevation is a critical variable that determines the productivity, diversity, and stability of saltmarshes. The long-term existence of the saltmarsh depends on the success of the dominant plants, such as <i>Sarcoconia pacifica</i> (also referred to as <i>Salicornia virginica</i>) and <i>Frankenia salina</i>, and their close relationship to sediment supply, soil salinity, sea level change, and tidal range. Reduced sediment loading consistent with the watershed numeric target will encourage the establishment of native vegetation in degraded areas. To represent the linkage between source contributions and receiving water response, models were developed to simulate source loadings and transport of sediment into the Lagoon. The models provide an important tool to evaluate year 2000 conditions, to evaluate historic conditions, and to calculate TMDL load reductions.

A-6

Implementation Plan

A-7

Component	Key Findings and Regulatory Provisions
	The San Diego Water Board encourages cooperation among all the responsible parties. While all the responsible parties in the Los Peñasquitos watershed must reduce their collective sediment load, the Phase I MS4 systems collect and drain virtually the entire watershed. As such, the Phase I MS4 copermittees represent the ultimate point source conveyor of sediment to the Lagoon. Therefore, it is the responsibility of the Phase I MS4 copermittees to assume the lead role in coordinating and carrying out the necessary actions, compliance monitoring requirements, and successful implementation of the adaptive management framework required as part of this TMDL. Individual industrial facilities and construction sites are subject to regulation on two levels: (1) The San Diego Water Board is responsible for ensuring MS4 copermittees comply with the MS4 requirements in the MS4 storm water permit; and (2) each local municipality is responsible, under the MS4 storm water permit, for enforcing its own ordinances and permits (for violations of its ordinances/permits by an individual industrial facility or construction site within its jurisdiction). The San Diego Water Board is also responsible for enforcing the statewide General Industrial and Construction Storm Water NPDES Permits within its jurisdiction. The San Diego Water Board relies upon the municipality to enforce its ordinances/permits and then work with the municipality to coordinate information and actions to compel compliance. <u>Phased Implementation via the Adaptive Management Approach</u> A common problem in natural resource management involves a temporal sequence of decisions (or implementation actions), in which the best action at each decision point depends on the state of the managed system. Adaptive management is a structured iterative implementation process that offers flexibility for responsible parties to monitor implementation actions, determine the success of such actions and ultimately, base future management decisions upon the measured results of completed implementation actions and the current state of the system. This process enhances the understanding and estimation of predicted outcomes and ensures refinement of necessary activities to better guarantee desirable results. In this way, understanding of the resource can be enhanced over time, and management can be improved.

Component	Key Findings and Regulatory Provisions
	Adaptive management entails applying the scientific method to the TMDL. A National Research Council review of US EPA's TMDL program strongly suggests that the key to improving the application of science in the TMDL program is to apply the scientific method to TMDL implementation (NRC 2001). For a TMDL, applying the scientific method involves 1) taking immediate actions commensurate with available information, 2) defining and implementing a program for refining the information on which the immediate actions are based, and 3) modifying actions as necessary based on new information. This approach allows the Lagoon to make progress toward attaining water quality standards while regulators and stakeholders improve the understanding of the system through research and observation of how it responds to the immediate actions. Implementation actions to achieve the required WLA and improve the specified numeric targets will be implemented via an iterative process, whereby the information collected at each step will be used to inform the implementation of the next phase. The project will be adjusted, as necessary, based on the latest information collected to optimize the efficiency of implementation efforts. Ultimately, the path moving forward is to create the physical conditions related to remediating sediment impacts associated with this TMDL. The implementation effort can be divided into three primary phases for this TMDL, as described below: • Phase I Implementation includes elements to reduce the amount of sediment that is transported from the watershed to the Lagoon. An important component of Phase I will be to secure the relationships and agreements between cooperating parties and to develop a detailed scope of work with priorities. Phase I includes the following elements: - o Incorporate interim limits into WDRs and NPDES permits; - o Implement structural and nonstructural BMPs throughout the watershed; and - o Develop and initiate a comprehensive monitoring program, which includes compliance monitoring and targeted special studies. If appropriate, the TMDL will be reconsidered by the San Diego Water Board at the end of Phase I to consider completed special studies or policy.

Component	Key Findings and Regulatory Provisions
	- Phase II includes the implementation of additional watershed actions that are targeted to reducing sediment loads from high priority areas, as well as lagoon-specific actions that may be needed to facilitate recovery of beneficial uses that have been affected by various complex processes, including sedimentation, nuisance flows, reduced tidal circulation, and other factors. These actions may include Lagoon sediment remediation efforts, re-connecting the Lagoon's historic tidal channels, and maintenance of the Lagoon inlet in collaboration with State Parks, the San Diego Water Board, the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Rail Corridor Agency, US EPA, and the watershed responsible parties. Phase II may also include additional upstream protections and BMP implementation to further reduce watershed sediment contributions. Responsible parties will develop, prioritize, and implement Phase II elements based on data from compliance monitoring and special studies. - Phase III includes implementation of secondary and additional remediation actions, as necessary, to be in compliance with the required WLA allocation by the end of the compliance schedule. <u>Develop and Submit a Load Reduction Plan</u> Responsible parties are required to prepare and submit for San Diego Water Board review, comment, and revision, a Load Reduction Plan that demonstrates how they will comply with this TMDL. The San Diego Water Board expects that Load Reduction Plans will be developed collaboratively by the responsible parties within the watershed. The Load Reduction Plan shall be submitted to the San Diego Water Board within 12 months of the TMDL effective date, and reviewed by the San Diego Water Board Executive Officer within six months of submittal (this period will likely include a round of revisions by the responsible parties based on San Diego Water Board staff comments). The Load Reduction Plan shall establish a watershed-wide, programmatic, adaptive management approach for implementation and include a detailed description of implementation actions, identified and planned by the responsible parties, to meet the requirements of this TMDL. Implementation actions identified by the Load Reduction Plan may include source control techniques, structural and/or non-structural storm water

Component	Key Findings and Regulatory Provisions
	BMPs, and/or special studies that refine the understanding of sediment and pollutant sources within the watershed. The Load Reduction Plan shall include a description and objective of each implementation action, potential BMP locations, a timeline for project or BMP completion, and a monitoring plan to measure the effectiveness of implementation actions. Storm Water Pollution Prevention Plans (SWPPPs) prepared by Phase II MS4s, Industrial Permittees, and Construction Permittees pursuant to their respective statewide general NPDES permits fulfill these entities responsibility to prepare a Load Reduction Plan. Permittees within the Los Peñasquitos watershed shall update their SWPPPs within 12 months of the TMDL effective date with any additional BMPs, monitoring, etc. to account for their site's potential to impact the receiving waterbody with respect to sediment. Sites identified through monitoring data or site inspections as posing an increased risk to the receiving water body may be directed to perform additional monitoring by the San Diego Water Board Executive Officer to quantify sediment load contributions to the receiving waterbody. Comprehensive Approach The comprehensive approach to the Load Reduction Plan requires that implementation efforts address all current TMDLs, current 303(d) listed waterbody/pollutant combinations, and other targeted impairments within the Los Peñasquitos watershed. A comprehensive approach to the Load Reduction Plan is consistent with implementation planning currently underway to address all of the impaired segments that were included in the approved bacteria TMDLs for San Diego Region Beaches and Creeks (San Diego Water Board, 2010). The comprehensive approach to the Load Reduction Plan allows the responsible parties to proactively address other listed impairments within the watershed, which requires special studies to investigate sources and the water quality improvements needed to address these pollutants. Such special studies may significantly alter current understanding and refine the TMDL loading and/or allocations. This can impact the selection of subsequent implementation actions and how they are prioritized by responsible parties. A comprehensive approach to development of the Load Reduction Plan will provide a more cost effective and efficient approach for TMDL implementation and will have fewer potential environmental impacts associated with

Component	Key Findings and Regulatory Provisions
	construction of structural BMPs (San Diego Water Board, 2010). Load Reduction Plan Framework With increased urban development and inadequate management of runoff from impervious areas, increasing amounts of sediment are deposited into the Lagoon annually. To minimize the effects of runoff, proper sediment control can be achieved through the execution of implementation actions such as BMPs. Sediment implementation actions can be grouped into the four categories as summarized below. 1) <i>Preservation and Restoration</i>: Significant areas of land have been set aside for open space. Such land acquisition and preservation prevents natural areas from being developed and disturbed. Additionally, the restoration of riparian buffers and wetlands can include the stabilization of steep slopes with native riparian vegetation. This not only helps restore the habitat but also the natural function of the stream. 2) <i>Education & Outreach</i>: As a source control technique, education and outreach can function as pollution prevention to reduce or eliminate the amount of sediment generated at its source. Education and outreach can be targeted at specific land user groups and/or staff involved with site maintenance. As an example, implementation actions such as municipal incentives can be used to encourage proper irrigation and landscaping and can significantly reduce volumes of runoff. 3) <i>Retrofitting, New Development, & Site Management</i>: Urban development (MS4 contribution) is the primary source of anthropogenic sediment contribution above historical conditions. Development can expose sediment and contribute excessive amounts of sediment to the Lagoon. Additionally, increased imperviousness associated with development can lead to increased storm water runoff and soil erosion or gulying within the MS4 and receiving waters. Appropriate site management can partially or fully mitigate the effects of development. The Load Reduction Plan must identify and prioritize BMPs based on an analysis of opportunities and cost/benefit considerations. Furthermore, the Load Reduction Plan must detail BMP projects and locations. Storm water BMPs can be implemented to reduce the effects of pollutant loading and increased storm water flows from urban development. Structural BMPs include incorporation

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	of low impact development (LID) and storm flow hydrograph matching into new projects. The same structural BMPs can be utilized to retrofit existing sites or be applied as regional MS4 BMPs to treat pollutants and/or flows prior to discharge into receiving waters. 4) <i>Monitoring:</i> A coordinated monitoring plan is needed to establish existing watershed conditions (baseline conditions) from which future changes and anticipated improvement in water quality can be measured. Additional monitoring could focus on sensitive species, areas of saltmarsh coverage, extent of invasive plant species, BMP effectiveness, and/or reduction in impervious coverage. Additionally, monitoring is crucial in the assessment of implementation actions to gain an understanding of performance for future adaptive management actions. <u>Load Reduction Plan Implementation</u> The Load Reduction Plan must be implemented within 30 days upon receipt of San Diego Water Board comments and recommendation, but in any event, no later than 60 days after submittal. <u>Monitoring</u> Monitoring is required to measure the progress of pollutant load reductions and improvements in water and saltmarsh habitat acreage. The information presented below is intended to be a brief overview of the goals of the monitoring. Special studies may be planned to improve understanding of key aspects related to achievement of WLAs and LAs, restore the beneficial uses, and to assist in the modification of structural and non-structural BMPs if necessary. The goals of monitoring include: 1) To determine compliance with the assigned wasteload and load allocations. 2) To monitor the effect of implementation actions proposed by responsible parties to improve water and saltmarsh habitat quality including proposed structural and non-structural BMPs to reduce storm water run-off and sediment loading, and remediation actions to remove sediment from the Lagoon. 3) To monitor the extent of vegetation habitat acreages in the Lagoon and determine if additional implementation action should be required.

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	4) To implement the monitoring in a manner consistent with other TMDL implementation plans and regulatory actions within the Los Peñasquitos watershed. The proposed monitoring program shall be included in the Load Reduction Plan submitted to the San Diego Water Board Executive Officer for review. <i>Watershed Monitoring</i> Responsible parties must conduct suspended sediment, bedload, and flow monitoring to calculate total sediment loading to the Lagoon for each wet period (October 1 thru April 30) throughout the 20-year compliance period. The responsible parties must monitor enough storm events throughout to quantify sediment loading over each wet period. The compliance point for the WLA shall be the Lagoon as measured through the cumulative sediment loading from Los Peñasquitos, Carroll Canyon, and Carmel Creeks prior to entering the Lagoon. The responsible parties must monitor as many stations as necessary to quantify sediment loading to the Lagoon. Because of the natural variability in sediment delivery rates, sediment loading shall be evaluated using a 3-year, weighted rolling average. The first average must be calculated following the third critical wet period after the TMDL effective date. Responsible parties are encouraged to collaborate or coordinate their efforts with other regional and local monitoring programs to avoid duplication and reduce associated costs. <i>Lagoon Monitoring</i> The responsible parties shall monitor the Lagoon annually in the Fall for changes in extent of the vegetation types. Aerial photos of the Lagoon must be acquired, digitized onscreen (at an approximate 1:2,500 scale), interpreted, and mapped into generalized classifications. Vegetation types must be classified as saltmarsh, non-tidal saltmarsh, freshwater marsh, non-tidal saltmarsh – <i>Lolium perrene</i> infested, freshwater marsh, southern willow scrub/mulefat scrub, herbaceous wetland, or upland land cover (urban, beach, dune, upland vegetation, etc.). Vegetation type classifications are described in the <i>Sediment TMDL for Los Peñasquitos Lagoon Staff Report</i>. Ground truthing may be performed after aerial photo interpretation to distinguish between vegetation types.

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	Compliance Schedule The implementation schedule for this TMDL follows the form of an adaptive management strategy, tracks implementation progress with established milestones or interim goals, and sets forth a final compliance date. It is impractical for land managers to actually measure sediment loading on a daily basis; thus, compliance with the TMDL is most appropriately expressed as an average annual load and should be evaluated as a long-term running average to account for natural fluctuations and inaccuracies in estimating sediment loads. The expected timeframe to achieve the required reduction in sediment loading is 20 years following TMDL approval. This timeline takes into consideration the planning needs of the responsible parties and other stakeholders to establish a Load Reduction Plan, time needed to address multiple impairments, and provides adequate time to measure temporal disparities between reductions in upland loading and the corresponding Lagoon water quality response. Current studies and other implementation actions or projects are underway to reduce sediment loading to the Lagoon and to gain a better understanding of source contributions. A variety of such projects will continue throughout the development of the Load Reduction Plan, ensuring there are no gaps in implementation efforts throughout the process. At the end of the TMDL compliance schedule, as outlined in Table {insert table number}, waters must meet the Lagoon's sediment water quality standard and therefore, the Lagoon numeric target. If at any point during the implementation plan, monitoring data or special studies indicate that WLAs or LAs will be attained but the Lagoon numeric target may not be achieved, the San Diego Water Board shall reconsider the TMDL to modify WLAs and LAs to ensure that the Lagoon numeric target is attained.

Component	Key Findings and Regulatory Provisions			
	Table {Insert table number}. Los Peñasquitos Lagoon Sediment TMDL Implementation Compliance Schedule			
	Item	Implementation Action	Responsible Party	Date
	1	Obtain approval by OAL of Los Peñasquitos Lagoon Sediment TMDL = Establishes effective date of TMDL	San Diego Water Board, San Diego County, City of San Diego, City of Poway, City of Del Mar, Caltrans, General Storm Industrial and Construction permittees	Estimated June 2013
	2a	Issue, reissue, or revise general WDRs and NPDES requirements for Phase I MS4s, including Caltrans, to incorporate requirements for complying with TMDL and WLAs	San Diego Water Board and State Water Board	Completed during permit renewal - within 5 years of applicable permit date, and every 5 years thereafter.
	2b	Issue, reissue, or revise general WDRs and NPDES requirements for Construction and Industrial NPDES to incorporate requirements for complying with TMDL and WLAs	San Diego Water Board and State Water Board	Completed during permit renewal - within 5 years of applicable permit date, and every 5 years thereafter.
	2c	Issue, reissue, or revise general WDRs and NPDES requirements for Phase II NPDES permittees to incorporate requirements for complying with TMDL and WLAs	San Diego Water Board and State Water Board	Completed during permit renewal - within 5 years of applicable permit date, and every 5 years thereafter.
	3a	Completion of Load Reduction Plans	Phase 1 MS4s and Caltrans	Within 12 months of OAL effective date for sediment TMDL
	3b	Approval of Load Reduction Plan	San Diego Water Board Executive Officer	Within 6 months of submittal

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	3c	Phased, adaptive implementation of Load Reduction Plan	Phase 1 MS4s and Caltrans	In accordance with Load Reduction Strategy – ongoing throughout the implementation
	3d	Revision of SWPPPs	Construction, industrial, and Phase II Permittees	Within 12 months of OAL effective date for sediment TMDL
	4a	Submit annual Progress Report to the San Diego Water Board due January 31 each year	Phase 1 MS4s	Annually after reissuance of NPDES WDR
	4b	Submit annual Progress Report to the San Diego Water Board due April 1 each year	Caltrans	Annually after reissuance of NPDES WDR
	5	Enforcement Actions	San Diego Water Board	As needed
	6	Refine Load Reduction Plan	Phase 1 MS4s and Caltrans	As warranted by completion of special studies, additional monitoring and data compilation.
	7	Reopen and reconsider TMDL	San Diego Water Board	As defensible through the collection of additional data and significant findings by the watershed stakeholders.
	8	Meet Interim Milestone #1: Attain 20 percent required reduction in sediment loading (equivalent to 6567 tons of sediment per year) and/or show progress in improving Lagoon conditions consistent with the specified targets	MS4s and NPDES permittees	Within 5 years of approved TMDL
	9	Meet Interim Milestone #2: Attain 40 percent required reduction in	MS4s and NPDES permittees	Within 9 years of approved TMDL

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		sediment loading (equivalent to 5416 tons of sediment per year) and/or show progress in improving Lagoon conditions consistent with the specified targets		
	10	Meet Interim Milestone #3: Attain 60 percent required reduction in sediment loading (equivalent to 4265 tons of sediment per year) and/or show progress in improving Lagoon conditions consistent with the specified targets	MS4s and NPDES permittees	Within 13 years of approved TMDL
	11	Meet Interim Milestone #4: Attain 80 percent required reduction in sediment loading (equivalent to 3113 tons of sediment per year) and/or show progress in improving Lagoon conditions consistent with the specified targets	MS4s and NPDES permittees	Within 15 years of approved TMDL
	12	Meet Final Milestone: Achieve Lagoon numeric target	MS4s and NPDES permittees	Within 20 years of approved TMDL
<i>*Note: TMDL implementation schedule may be altered due to TMDL reconsideration; additionally, enforcement actions by the San Diego Water Board will be taken as necessary.</i>				