ATTACHMENT A
TO RESOLUTION NO. R9-2011-0021

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 Peñasqutios 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 Peñasqutios 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 Peñasqutios 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 (TMDL) has been adopted to address this impairment. See Chapter 2, Beneficial Uses Table 2-3. Beneficial Uses of Coastal Waters, Los Peñasqutios Lagoon, Hydrologic Unit Basin Number 6.10. See also Chapter 7, *Total Maximum Daily Loads, section entitled "Sediment Total Maximum Daily Load for Los Peñasqutios Lagoon."*

Chapter 7, *Total Maximum Daily Loads*

Amend Table 7-1 to add the Sediment TMDL for Los Peñasqutios Lagoon to the end of Table 7-1.

Total Maximum Daily Load	RWQCB Adoption Date	SWRCB Approval Date	OAL Approval Date	USEPA Approval Date
Sediment Total Maximum Daily Load for Los Peñasquitos Lagoon	TBD	TBD	TBD	TBD

Add the following section to the end of Chapter 7, and number appropriately:

Restoring Los Peñasqutios Lagoon: Three-Step Waterbody Goal

Los Peñasquitos Lagoon is one of the few remaining and irreplaceable coastal lagoons in southern California providing valuable estuarine habitat as well as numerous other important beneficial uses. Over the course of the 20th century, the Lagoon has incurred a number of important anthropogenic disturbances which, cumulatively, have resulted in excessive sedimentation and the gradual degradation and loss of estuarine habitat.

Restoration of the Lagoon is a high priority for the San Diego Water Board. Acknowledging the environmental and political complexities, as well as the time and financial resources needed to restore a coastal lagoon, the San Diego Water Board has established a three-step Waterbody Goal for Los Peñasquitos Lagoon. Although a return to pristine conditions is not expected, a holistic watershed restoration effort is expected to eventually result in the attainment of all applicable water quality standards in Los Peñasqutios Lagoon as well as in each of its three tributary creeks. **Accordingly, the Sediment TMDL for Los Peñasquitos Lagoon, see section {insert section #}, addresses Step 1, Intermediate-term Goal.**

Step 1 Intermediate-term Goal:
Attain water quality objective for sediment in Los Peñasquitos Lagoon and address current Clean Water Act section 303(d) sediment impairment

Overall Strategy
Reduce current watershed sediment load to early 1970s watershed sediment load. Initiate long-term Lagoon monitoring to assess Lagoon's response to decreasing sediment loads and overall health.
Regulatory Action
Adopt and implement sediment TMDL

Step 2 Long-term Goal:
Stop degradation and loss of Los Peñasquitos Lagoon's salt marsh habitat. Restore to condition of early 1970s salt marsh in terms of extent and quality.

Overall Strategy
To monitor, assess, and implement appropriate regulatory mechanism.
Regulatory Action

To be determined based on results of Lagoon monitoring.

Step 3 Final Goal:
Attain all water quality objectives and protect all beneficial uses. Restore Lagoon to functional healthy estuarine ecosystem.

Overall Strategy
To monitor, assess, and implement appropriate regulatory mechanism.
Regulatory Action
To be determined based on results of Lagoon monitoring.

Step 1: Sediment Total Maximum Daily Load for Los Peñasquitos Lagoon

On [insert date], the San Diego Water Board adopted ***Resolution No. R9-2011-0021, 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. R9-2011-0021 became effective following OAL approval on [Insert date],

Technical TMDL Analysis

Component	Key Findings and Regulatory Provisions
Problem Statement	**Waterbody Value** Los Peñasqutios Lagoon is one of the few remaining and irreplaceable coastal lagoons in southern California providing critical estuarine habitat (marine nursery, refuge, Pacific Flyway stopover, etc.) as well as numerous other important wetland functions (natural pollutant removal, flood attenuation, etc). The Lagoon is located within the Torrey Pines State National Reserve adjacent to Torrey Pines State Beach, a popular tourist destination in the northern portion of San Diego County. **Gradual Degradation** Over the course of the 20th century, Los Peñasquitos Lagoon has incurred a number of important anthropogenic disturbances. By confining the ocean inlet and bisecting (and fragmenting) the Lagoon with transportation corridors in several locations, the amount and reach of the tidal exchange within the Lagoon has been greatly restricted. Beginning in the 1960s and continuing for over a decade, a municipal waste water pump station serviced the area's growing population. By the early to mid-1970s, the surrounding watershed was undergoing rapid and intense urbanization that would greatly change the landscape and

	generate year-round flows of freshwater and sediment to the Lagoon. The combined effect of these disturbances has been to significantly alter many of the natural processes needed to support a healthy estuarine habitat leading to excessive sedimentation and a range of other related confounding problems including : (1) significantly increased sediment deposition; (2) significantly decreased extent of tidal influence; (3) significantly increased volume and frequency of freshwater flows; and (4) increased turbidity. **Cumulative Result** The cumulative result of a century of anthropogenic disturbances, and ensuing problems, is the generally degraded conditions present in Los Peñasquitos Lagoon today and of *paramount concern is the gradual degradation and loss of valuable estuarine habitat.* In 1996 Los Peñasquitos was designated on the Clean Water Act (CWA) section 303(d) list as impaired for sedimentation/ siltation and this TMDL project was initiated to address that listing. Nevertheless, the San Diego Water Board remains keenly aware that the most significant challenge ahead is to *slow and reverse the gradual conversion of the Lagoon's saltmarsh habitat to freshwater weltands and uplands habitat.* A sediment reducing TMDL is an important start, but it is understood that additional future regulatory and restorative measures will likely be needed. **CWA 303(d) Listing and Impairment** From 1996 to present, the Los Peñasqutios Lagoon has been designated on the Clean Water Act (CWA) section 303(d) list as impaired by excessive sedimentation/siltation. This designation indicates that Los Peñasqutios Lagoon is not meeting the applicable water quality objective for sediment and therefore is not fully supporting its beneficial uses. **Water Quality Objectives** Chapter 3 of this Basin Plan contains the following narrative water quality objective for sediment: "*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 Estuarine habitat is considered the most important and most sensitive of Los Peñasqutios Lagoon's beneficial uses. Other beneficial uses designated in Chapter 2 of this Basin Plan include: contact water recreation; non-contact water recreation; 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. **Project Objective: Attain Sediment Objective in Lagoon** *The objective of this TMDL project is to reduce anthropogenic sediment loading from the watershed to the level at which Los Peñasqutios Lagoon will meet the Basin Plan water quality objective for sediment.* **Project Strategy to Attain Objective** To address the sedimentation problem and current CWA section 303(d) listing, this TMDL project requires responsible parties to implement a range of structural and non-structural best management practices which will reduce the current sediment loading rate from the watershed to the early 1970s sediment loading rate from the watershed. Once fully implemented, this TMDL project is expected to result in significant improvements to the water quality conditions in the Lagoon and is intended to be an essential first step toward full Lagoon restoration.
Numeric Target *Interpretation of narrative water quality objective*	**Numeric Target** Based on early 1970s land use information, the San Diego Water Board estimated that the loading rate at the time from all sources was 12,360 tons per critical wet period. Using a weight of evidence approach, the early 1970s represents a time when Los Peñasqutios Lagoon received relatively natural background loads of sediment from all sources and was likely attaining the sediment water quality objective. Accordingly, if the current sediment loading rate is reduced in accordance with the assigned wasteload and load allocations, the sediment water quality objective should once again be achieved in the Lagoon. A historic coverage for the Los Peñasquitos watershed was developed for this period using US Geological Survey topographic maps from the 1970s. This historic land use distribution was used to calculate the numeric target using a

	watershed model. The resulting historic sediment load of 12,360 tons per critical wet period (58.6 tons per day) represents the sediment TMDL numeric target.
Sources and Responsible Parties	**Watershed Point and Non-point Sediment Sources** There are two broad categories of sediment sources to the Lagoon: 1) "collective watershed sources"; and 2) the Pacific Ocean. The "collective watershed sources" consist of all of point and non-point sources of sediment in the watershed tributary to Los Peñasqutios Lagoon. Point sources: The primary point sources in the watershed include the four National Pollutant Discharge Elimination System "Phase I" MS4 copermittees, namely the San Diego County, City of San Diego, City of Del Mar, and City of Poway. Other point sources include Caltrans infrastructure, all Phase II MS4s, and all individual industrial facilities and construction sites located within the watershed. All point sources are considered "controllable" anthropogenic sources. Non-point sources: In this project, the "collective watershed sources" also include all the *non-point sources located in the watershed* such as agriculture (1 percent of current land use area) and open space (43 percent of current land use area). This is the case because virtually the entire Los Peñasqutios watershed is drained through the Phase I MS4 collection systems and therefore these sources, although nonpoint in origin, are considered by the San Diego Water Board to be "controllable" point sources. For this reason the Phase I MS4s can be thought of as the primary and ultimate point sources of sediment to the Lagoon. **Ocean Non-point Sediment Sources** The Pacific Ocean is a significant non-point source of sediment to the Lagoon that the San Diego Water Board considers to be an uncontrollable natural background source. Sediment loads from the ocean are primarily a function of littoral forces and other factors that are largely separate from the sedimentation problem originating from the watershed. Although important to understanding the entire picture for management purposes, the ocean sources are outside the scope of this initial project. **Responsible Parties** The "responsible parties" are defined as the owners and operators of the "collective watershed sources." Hence, the responsible parties were assigned a collective waste load

	allocation and are jointly responsible for meeting the waste load reductions required in this TMDL project. Owners and operators of the collective watershed sources are the only responsible parties in this project and include the following: Phase I MS4s copermittees (the County of San Diego, City of San Diego, City of Del Mar, and City of Poway), Phase II MS4s permittees, Caltrans, and the General Construction and General Industrial Storm Water permittees.
Linkage Analysis	**Linkage Analysis** Available data were used to configure, calibrate, and validate a customized modeling framework developed to support sediment TMDL development. The modeling framework consists of a watershed model (based on the Loading Simulation Program in C++, LSPC) and a receiving water model (based on the Environmental Fluids Dynamic Code, EFDC). The watershed model was used to calculate existing and historical sediment loading to the Lagoon from the Los Peñasquitos watershed, while the Lagoon receiving water model was used to simulate hydrodynamics and sediment transport characteristics for this tidally-influenced waterbody.
TMDL and Allocations	**TMDL = 12,360 tons per year** The maximum load of sediment that Los Peñasquitos Lagoon can receive from all sources and still meet the sediment water quality objective is estimated at 12,360 tons per year, the early 1970s loading rate. **Wasteload Allocations to Watershed = 2,580 tons/year** As the primary controllable point source to the Lagoon, a wasteload allocation (WLA) of 2,580 tons/year was assigned to the "collective watershed sources." Wasteload reductions are required of the watershed sources collectively. **Load Allocations to Ocean = 9,780 tons/year** The ocean was assigned a load allocation (LA) of 9,780 tons/year. Because the ocean is considered an "uncontrollable" natural background source, load reductions are not required of the ocean.
Required Load Reductions	**Historic Sediment Loads** Modeling of early 1970s land use conditions indicates that of the total 12,360 tons of sediment entering the Lagoon on an annual basis, approximately 2,580 tons was contributed by the "collective watershed sources", while the remaining 9,780 tons originated from the ocean.

	Current Sediment Loads Modeling of current land use conditions indicates that of the total 13,663 tons of sediment entering the Lagoon on an annual basis, approximately 7,719 tons is contributed by the "collective watershed sources", while the remaining 5,944 tons originate from the ocean. **Watershed Sources Must Reduce Current Loads by 67 percent** In order to return to the early 1970's sediment loading rate, and hence to attain the sediment water quality objective in the Los Peñasqutios Lagoon, the "collective watershed sources" must jointly reduce their current sediment loading by 67 percent. No load reductions are assigned to the Pacific Ocean.
Critical Conditions	**Critical Location** Due to the variability and dynamic nature of conditions within the Lagoon (e.g., mouth closures, tidal fluctuations, sediment fate and transport, etc.), the entire modeled Lagoon area was assessed as the critical location. Load reductions for sediment were based on achieving the numeric TMDL target across the Lagoon. **Critical Condition** The wet season that includes the 1993 El Nino storm events (10/1/92 – 4/30/93) was selected as the critical condition time period for TMDL development. This is one of the wettest periods on record over the past several decades. Because of the large amount of rainfall, sediment loads were significantly higher during this period than in other years with less rainfall.
Seasonal Considerations	**Seasonal Considerations** Sources of sediment are similar for both dry and wet weather seasons (the two general seasons in the San Diego region). Despite the similarity of wet/dry sources, transport mechanisms can vary between the two seasons. Throughout the TMDL monitoring period, the greatest transport of sediment occurred during rainfall events. It is recognized that dry weather will contribute a de minimis discharge of sediment; however, model calibration and TMDL development focused on wet weather conditions as sediment transport is dramatically higher during wet weather.
Margin of Safety	Implicit, used conservative assumptions.

Implementation Plan

Component	Key Findings and Regulatory Provisions
Implementation Actions	**Actions San Diego Water Board May Take** The San Diego Water Board may exercise any of its authorities under the Water Code to compel responsible parties to comply with the total wasteload allocation in this TMDL. **Responsible Parties Identification** The responsible parties must undertake actions that will reduce watershed sediment loads in accordance with the appropriate compliance schedule in section 8.3. In this TMDL project, the term "responsible parties" is defined as the owners and operators of the collective watershed sources. The term "collective watershed sources" is defined as any point or non-point source of sediment discharging from the watershed to Los Peñasquitos Lagoon. Responsible parties include: Phase I MS4s copermittees (the County of San Diego, City of San Diego, City of Del Mar, and City of Poway), Phase II MS4s permittees, Caltrans, and the General Construction and General Industrial Storm Water permittees. Under this TMDL, the responsible parties were collectively assigned a single waste load allocation, which they are collectively responsible for meeting. To meet their collective waste load allocation, the responsible parties must take actions to reduce their collective sediment loads to the watershed. To reduce their collective sediment loads, the owners and operators of each individual point and non-point source must individually reduce their own sediment load attributable to their discharge. Furthermore, owners and operators of point and non-point sources are collectively responsible for reducing the collective sediment discharge from the watershed to the Lagoon. The San Diego Water Board expects cooperation among all the responsible parties. While it is the collective responsibility of all the responsible parties in the Los Peñasquitos watershed to reduce their collective sediment load, the Phase I MS4 systems collect and drain virtually the entire watershed. As such, the Phase I MS4 copermittees become the ultimate point source conveyor of sediment to the Los Peñasquitos Lagoon. Therefore, it is the expectation and responsibility of the Phase I MS4 copermittees to assume the lead role in coordinating and carrying out the responsible party actions, compliance monitoring, and adaptive management required under this TMDL project. Furthermore, individual industrial facilities and construction sites

	are subject to regulation on two levels: (1) The San Diego Water Board is responsible for enforcing its MS4 permits (for violations of the MS4 permit by the MS4 copermittees); 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 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. **Develop and Submit a Load Reduction Plan** The Phase I MS4 owners (City of San Diego, City of Del Mar, City of Poway, and County of San Diego) and Caltrans are required to jointly prepare and submit for San Diego Water Board review, comment, and revision, a Sediment Load Reduction Plan (SLRP) that demonstrates how they will comply with the required wasteload reductions in this TMDL. If the Phase I MS4s and Caltrans choose to address impairments due to loads from multiple pollutants, in addition to sediment, then they will be required to jointly prepare and submit a Comprehensive Load Reduction Plan in lieu of a SLRP. If the Phase I MS4s and Caltrans choose to submit a SLRP that addresses only sediment, compliance must be achieved as soon as possible, but no later than 10 years from this TMDL effective date. If the decision is made to address multiple pollutants in a Comprehensive Load Reduction Plan (CLRP), compliance must be achieved as soon as possible, but no later than 20 years from this TMDL effective date. The detailed SLRP and CLRP must be submitted to the San Diego Water Board for review and comment within 18 months after the effective date of this TMDL.[1] **SLRP Requirements** The SLRP shall contain, at a minimum, the following components: 1) A plan to identify the BMPs/water quality projects that are planned for implementation and provide an implementation schedule for each BMP/water quality project. The SLRP must

[1] The effective date is the date the Office of Administrative Law approves this Basin Plan amendment.

	demonstrate how the BMPs/water quality projects will result in the required sediment load reductions in accordance with the 10 year compliance schedule. This plan, at a minimum, should include scheduling for the following: A. Initial BMP Analysis - Watershed and site data should be analyzed to identify effective BMPs for implementation. B. Scheduled BMP Implementation - The above analysis should be used to identify BMPs that will be implemented and to develop an aggressive BMP implementation schedule. The SLRP should include a construction schedule and provide a discussion on adjustments to staff scheduling and resources to meet new BMP demands. Schedules should be realistic and justifiable. C. Scheduled Periodic BMP Assessment and Optimizing Adjustments - As the BMPs are being implemented, a scheduled in-depth assessment of the BMPs' performance should follow. BMPs that are found to be ineffective should be modified to incorporate optimizing adjustments to improve performance or be replaced by other effective BMPs. The results from this assessment should also be used to determine additional BMP selection and the schedule for additional BMP implementation. The SLRP should include periodic, in-depth BMP assessment and adjustment. D. Scheduled Continuous Budget and Funding Efforts- Securing budget and funding for BMP staffing and equipment should be scheduled early and continue until the sediment TMDL is met. The SLRP should include a schedule for staff time, including position and job description, authorized for securing funding for non-structural BMP implementation and maintenance. 2) A coordinated monitoring and reporting program that is consistent with the compliance monitoring requirements and the Lagoon monitoring requirements. 3) Details of the required special studies, including delivery dates for those studies. 4) Data sufficient to complete the side-by-side comparison of historic conditions (early 1970s) and current conditions (2000-current) to inform the lines of evidence necessary to determine compliance. 5) Each SLRP should be reviewed periodically to identify needed

	modifications and improvements. The responsible parties should develop and implement a plan and schedule to address the identified modifications and improvements. All updates to the SLRP should be documented in the SLRP, and submitted to the San Diego Water Board. 6) Individual responsible parties should also review and modify their jurisdictional ordinances, permits, and activities as necessary so that they are consistent with the requirements of the SLRP. **CLRP Requirements** The CLRP shall contain, at a minimum, the following components: 1) The SLRP components required above; and 2) A comprehensive watershed and multi-pollutant load reduction approach that includes the following information: A. Identify the Lead Watershed Contact for the CLRP. The Lead Watershed Contact should serve as liaison between all other common watershed responsible parties and the San Diego Water Board, where appropriate. B. Describe a program for encouraging collaborative, watershed-based, land-use planning in their jurisdictional planning departments. C. Develop and periodically update a map of the CLRP watershed, to facilitate planning, assessment, and collaborative decision-making. As appropriate, the map should include features such as receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; water quality projects; land uses; MS4s; major highways; jurisdictional boundaries; and inventoried commercial, industrial, and municipal sites. D. Periodically assess the water quality of all water body/pollutant combinations within the Peñasquitos watershed in the CLRP to identify all water quality problems. This assessment should use applicable water quality data, reports, and analysis generated in accordance with the requirements of the applicable NPDES MS4 monitoring and reporting programs, as well as applicable information available from other public and private organizations. E. Identified water quality problems in the Lagoon, Los

	Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek including, in addition to sediment, all CWA section 303(d) listings, persistent violations of water quality standards, toxicity, impacts to beneficial uses, water quality conditions for which water quality improvement projects are currently being implemented, and any other pertinent conditions. All pollutants in all impaired waters within the Peñasquitos watershed shall be included. F. Develop and implement a collective watershed CLRP strategy to meet the sediment TMDL and all other receiving water quality standards for all other pollutants being addressed in the CLRP. The strategy should guide responsible parties in BMP planning and scheduling. G. Collaborate to develop and implement the CLRP. The CLRP should include a proposal for frequent regularly scheduled meetings among the responsible parties in the impaired watershed. **Implement Load Reduction Plan** The SLRP or CLRP must be implemented immediately upon receipt of Water Board comments and recommendation, but in any event, no later than 60 days after submittal to the San Diego Water Board. **Reasonably Foreseeable Methods of Compliance by RPs** • Plant native vegetation on canyon bluffs to prevent erosion, installing irrigation systems as required to support establishment. • Revise existing local permits and ordinances for consistency with these load reduction requirements, as needed; or adopt new ordinances/issue new permits, as needed. • Enforce all local ordinances and permits as needed for consistency with these load reduction requirements. • Install basins to retain sediment. • Install dissipaters to slow discharge velocity to canyons. • Install bio-swales to infiltrate runoff. • Install and vegetate buffers to protect erosion channels. • Repair and/or replace storm drainage infrastructure. • Take actions to restore streams and the Lagoon by removing accumulated sediments, stabilizing banks, restoring natural channels, and revegetating. • Stabilize slopes above erosion channels. • Require low impact development controls designed to reduce runoff for new construction. • Install sand filters where appropriate. • Educate watershed residents and businesses about the

	sediment problem in Los Peñasquitos Lagoon and what actions they need to take to reduce the problem. **Compliance Monitoring** Compliance monitoring is required of the responsible parties to assess their BMP effectiveness and progress towards achieving the required interim milestones and final load reductions in accordance with the compliance schedule. The responsible parties are required to design and carry-out a compliance monitoring program that is capable of demonstrating that the responsible parties' have reduced their collective watershed sediment loading to the Lagoon to the early 1970s watershed loading rate. The proposed Compliance Monitoring Program should be included in the Load Reduction Plan submitted to the San Diego Water Board for review. The compliance monitoring program should be developed in coordination with other monitoring programs. The compliance monitoring program must establish the following elements: 1) Specification of the constituents, sample locations and frequency of monitoring; 2) The types of monitoring techniques to be used; 3) The standard operating procedures and appropriate quality assurance protocols; 4) Analytical techniques and objectives for the interpretation and analysis of information gathered; 5) A process for refining and modifying the monitoring design in response to changing objectives and improved information; and 6) A designated laboratory with sufficient capacity and appropriate levels of certification. **Compliance Determination** The Step 1 intermediate-term waterbody goal and the objective of this TMDL project are to "attain the water quality objective for sediment in Los Peñasquitos Lagoon and address the current Clean Water Act section 303(d) sediment impairment." Final compliance with this project will be reached when the responsible parties have demonstrated that they have reduced their collective watershed sediment load to Los Peñasquitos Lagoon to the early 1970s watershed sediment load in accordance with the appropriate compliance schedule. Similarly, interim milestone compliance will be based on the responsible parties' ability to demonstrate that each interim milestone load reduction has been achieved in accordance with the appropriate compliance schedule.

	Because of the uncertainty in the data collected to model sediment loads and the difficulty to accurately quantify sediment loads in the field, responsible parties must demonstrate compliance through a weight of evidence approach. Furthermore, the compliance demonstration must be based, to the extent possible, on actual measurements collected in the field. <u>Weight of Evidence Approach</u> Attainment of the 1970s loading rate will be demonstrated by measuring and reporting on any combination of the following individual lines of evidence that are sufficient to demonstrate reductions: *Sediment Delivery to Lagoon / Sediment Accretion in Lagoon* • Total estimated sediment loading rate • Total estimated accretion rate *Lagoon Conditions* • Saltwater Marsh Acreage • Freshwater Wetlands acreage • Saltwater Marsh Condition (qualitative evaluation) • Percent imperviousness of watershed • Index of Biotic Integrity Score • CRAM Score *Creek Conditions* • Elevation of Lagoon Bottom Sediment Near Creek Mouth: • Average Width and Depth of Creek Channel at Mouth: • Decrease in Flow Regime at Creek Mouth: • Creek Index of Biotic Integrity Score: • Riparian and Streambank Indicators • Hillslope Erosion Features Each line of evidence must establish the early 1970s condition and the existing condition in the SLRP or CLRP, such that progress can be quantified as a percent. In addition, all lines of evidence must be weighted. The responsible parties may also propose other equivalent lines of evidence in their SLRP or CLRP, which can effectively measure and report sediment load reductions. For example, computer modeling results of the management scenarios actually implemented may be used as a supporting line of evidence to be considered along with field measurements, but may not be used

alone.

Compliance Schedule

Responsible parties must demonstrate compliance with each interim milestone load reduction specified in the Compliance Schedule as shown in Table {Insert table number}. **Ultimate compliance must be achieved as soon as possible, but no later than 10 years from the effective date of the TMDL.**

Table {Insert table number}. 10-Year Compliance Schedule

Item	Implementation Action	Entity	Date
1	Meet Interim Milestone Reduction #1 30% required reduction in sediment loading to achieve 1970s loading rate	Responsible parties	Within 4 years of effective date of TMDL[a]
2	Meet Interim Milestone Reduction #2 60% required reduction in sediment loading to achieve 1970s loading rate	Responsible parties	Within 6 years of effective date of TMDL[a]
3	Attain Final 100% Reduction in sediment loading to achieve 1970s loading rate (100% of required load reduction is equivalent to 67% reduction from current loading rate)	Responsible parties	Within 10 years of effective date of TMDL[a]

[a] Effective date is the date of approval by OAL.

Alternative Compliance Schedule

As an incentive to take a more comprehensive pollution reduction approach, an alternative 20-year schedule is provided which requires responsible parties to plan for, and demonstrate required load reductions of bacteria and other pollutants, in addition to the sediment load reductions required by this project.

Under the Alternate Compliance Schedule, responsible parties must develop, submit, and implement a Comprehensive Load Reduction Plan (CLRP). Responsible parties must demonstrate compliance with all interim milestone sediment load reductions specified in Table {Insert table number} during the 20-year life of this project in addition to other pollutant load reduction schedules as mutually agreed upon in advance by the responsible parties and the San Diego Water Board Executive Officer**. Ultimate compliance must be achieved as soon as possible, but no later than 20 years** from the effective date of this TMDL, as

shown in Table {Insert table number} below.

Table {Insert table number}. Alternate 20-Year Compliance Schedule *(I Milestone and Final Reductions)*

Item	Implementation Action	Entity	Date
1	Meet Interim Milestone #1 of 20% required reduction in sediment loading to achieve 1970s loading rate	Responsible Parties	Within 5 years of effective date of TMDL[a]
2	Meet Interim Milestone #2 of 40% required reduction in sediment loading to achieve 1970s loading rate	Responsible Parties	Within 9 years of effective date of TMDL[a]
3	Meet Interim Milestone #3 of 60% required reduction in sediment loading to achieve 1970s loading rate	Responsible Parties	Within 13 years of effective date of TMDL[a]
4	Meet Interim Milestone #4 of 80% required reduction in sediment loading to achieve 1970s loading rate	Responsible Parties	Within 15 years of effective date of TMDL[a]
5	Attain final 100% reduction in sediment loading to achieve 1970s loading rate (100% of required load reduction is equivalent to 67% reduction from current loading rate)	Responsible Parties	Within 20 years of effective date of TMDL[a]

[a] Effective date is the date of approval by OAL.

Responsible parties may also propose additional interim milestone and final compliance schedules for San Diego Water Board consideration and acceptance.

Adaptive Management

Adaptive management entails applying the scientific method to the TMDL. A National Research Council review of U.S. 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. 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 by observing how it responds to the immediate actions.

Required Lagoon Monitoring

Long-term Lagoon monitoring is required of the responsible parties to measure and assess the Lagoon's response to the sediment load reductions required under this TMDL over time. The specific purpose of the Lagoon monitoring results will be to serve as a "trigger" to indicate the need for, and timing of, further follow-up regulatory actions by the San Diego Water Board and further restorative actions by the responsible parties. In other words, the Lagoon Monitoring Program results will be used to signal when, and if there is a need for, the San Diego Water Board to proceed to Steps 2 and 3 of the Waterbody Goals. If, for example, the monitoring results show little improvement in the Lagoon's health over time in response to load reductions, then the San Diego Water Board will have the information needed to support moving the restoration process forward to Step 2 in the Three-Step Waterbody Goals. To the contrary, if the Lagoon shows a marked improvement in response to the sediment reductions required under this project (Step 1 for the Three-Step Waterbody Goals), then no further regulatory or restorative actions may be warranted at this time.

For this reason, the long-term Lagoon Monitoring Program is an essential component of adaptive management for this TMDL project and is critical to the cost effective restoration of the Lagoon. The responsible parties will be required to design and carry-out a long-term Lagoon Monitoring Program that will, at a minimum, include tracking the areal extent of the salt marsh habitat, and will be capable of answering the following questions:

- What is the ecological health of the Lagoon?
- How is the Lagoon's health changing with time?
- What is the progress toward ultimate restoration of the Lagoon?
- What additional regulatory and implementation actions are needed to restore the Lagoon?

The long-term Lagoon Monitoring Program must include the same elements as the Compliance Monitoring program. The elements must be established in the SLRP or CLRP. In addition, the Lagoon Monitoring Program should be developed in coordination with other related monitoring programs, and will likely be incorporated directly into (and will augment) the existing monitoring requirements under the MS4 permit. One of the San

Diego Water Board's priorities is to eventually create (1) a seamless incorporation of all TMDL requirements into the applicable existing MS4 permits; and (2) a seamless implementation of TMDL requirements by the copermittees as part of implementing their MS4 requirements.

Required Special Study on Lagoon Stressors

Because sediment is not the only stressor to Lagoon health and this TMDL is likely only a first step toward achieving the Three-Step Waterbody Goal, the responsible parties are required to quantify the magnitude and extent of impacts caused by **all** stressors to Lagoon health. In the SLRP and CLRP, the responsible parties must design a study to answer the following questions:

- What is the extent of salt marsh habitat and why is it being converted to freshwater habitat?
- What factors are affecting the Lagoon's health?
- What are the watershed sources of these factors?
- What impacts do dry weather flows have on the Lagoon and bacteria sources?

The study should be developed in coordination with other monitoring programs. Any monitoring program developed as part of this study must include the same elements identified in Compliance Monitoring. The Special Study on Lagoon Stressors must be proposed in the SLRP or CLRP.

Adaptive Management Schedule

The above adaptive management reports are summarized in Table {Insert table number}.

Table {Insert table number}. *Adaptive Management Schedule*

Item	Action	Entity	Date
1	Develop Special Studies in SLRP or CLRP	Responsible parties	Within 18 months of OAL approval
2	Carry-out Special Studies	Responsible parties	Within 4 years of OAL approval
3	Submit report to San Diego Water Board on Required Special Studies	Responsible parties	Within 5 years of OAL approval
4	Make management decisions based on results of Special Studies	Responsible parties and San Diego Water Board	Within 1 year of submittal of report from item 3