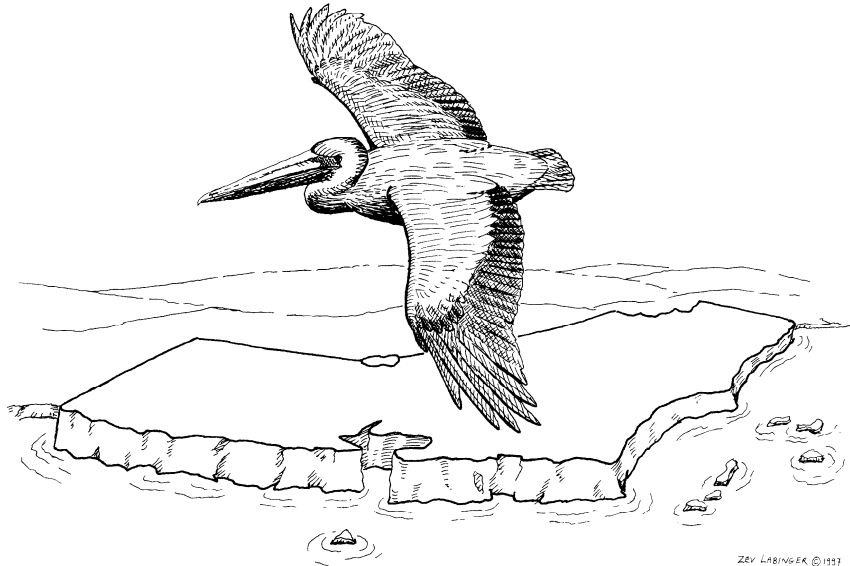


DRAFT

STAFF REPORT
SUBSTITUTE ENVIRONMENTAL DOCUMENTATION

AMENDMENT OF
THE WATER QUALITY CONTROL PLAN
OCEAN WATERS OF CALIFORNIA

CALIFORNIA OCEAN PLAN



August 2011



STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Draft SED for Ocean Plan Amendments – August 24 2011



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LIST OF ABBREVIATIONS

AIS	Aquatic Invasive Species
ASBS	Areas of Special Biological Significance
BMPs	Best Management Practices
Cal/EPA	California Environmental Protection Agency
Cal. Code Regs.	California Code of Regulations
Wat. Code	California Water Code
CARB	California Air Resources Board
CCC Act	California Clean Coast Act
CDS	Comprehensive Demonstration Study
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CINMS	Channel Islands National Marine Sanctuary
CWA	Clean Water Act
DFG	California Department of Fish and Game
DO	Dissolved Oxygen
DTSC	California Department of Toxic Substances Control
EIR	Environmental Impact Report
GFNMS	Gulf of Farallons National Marine Sanctuary
IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution from Ships
MBNMS	Monterey Bay National Marine Sanctuary
MGD	Million Gallons per Day
MIS Act	Marine Invasive Species
MPA	Marine Protected Areas
MQO	Measurement Quality Objectives
MRP	Monitoring and Reporting Programs
MS4	Municipal Separate Storm Sewer Systems
MSDs	Marine Sanitation Devices
NDZ	No Discharge Zone
NMFS	National Marine Fisheries Service
NMS	National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NSR	New Source Review
NRC	Nuclear Regulatory Commission
OAL	Office of Administrative Law
Ocean Plan	California Ocean Plan
PAH	Polycyclic Aromatic Hydrocarbon
Porter-Cologne	Porter-Cologne Water Quality Control Act
POTWs	Publicly Owned Treatment Works
QAMP	Quality Assurance Management Plan
RCRA	Resource Conservation and Recovery Act
Regional Water Board	Regional Water Quality Control Board
SCB	Southern California Bite
SCCWRP	Southern California Coastal Water Research Project

SED	Substitute Environmental Document
State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
SWQPA	State Water Quality Protection Area
tit.	Title
TIE	Toxicity Identification Evaluation
TRE	Toxicity Reduction Evaluation
TRW	Triennial Review Work Plan
U.S.C.	United States Code
USCG	U.S. Coast Guard
U.S. EPA	United States Environmental Protection Agency
VGP	Vessel General Permit
Water Boards	State and Regional Water Boards
WDR	Waste Discharge Requirement

1.0 SUMMARY

The State Water Resources Control Board (State Water Board) staff has prepared this draft Substitute Environmental Documentation (draft SED) to consider amendments to the 2009 California Ocean Plan (Ocean Plan). The report contains a description of the sections within the Ocean Plan proposed for amendment.

Issue 1: Appendix III, Model Monitoring

Amend Appendix III of the 2009 Ocean Plan to (1) be a question-driven monitoring framework to include regional monitoring, specific storm water monitoring, and specific non-point source monitoring and to (2) focus on assuring compliance with narrative and numeric water quality standards, the status and attainment of beneficial uses, and identifying sources of pollution.

Issue 2: Control of Commercial Vessel Discharges

Remove language in the Introduction (C)(2) regarding the non-applicability of the Ocean Plan to vessel wastes. Introduce language to Section (III) to implement existing state law for cruise ships and other ocean going commercial vessels.

Issue 3: Non-Substantive Changes

Replace Figure VIII-5 of the 2009 Ocean Plan with an updated map, reflecting the correct location of Aliso Water Management Agency's ocean outfall and the newly adopted Marine Protected Areas (MPAs) along the southern coast. Rename Tables A - D to Tables 1 - 4 to reflect order of appearance in the Ocean Plan. Make minor grammatical and formatting changes.

The proposed amendments if adopted would provide the State Water Board with more effective and efficient means of monitoring the effects of discharges into ocean waters. None of the proposed amendments are expected to result in significant impact on the environment.

2.0 INTRODUCTION

This report represents the State Water Board's draft SED for the adoption of amendments to the 2009 Ocean Plan and is organized as follows:

- ◆ Introduction
 - ◆ Background and History of the Ocean Plan
 - ◆ Regulatory Background
 - ◆ CEQA Analysis and Impact of the Proposed Amendments
 - ◆ Peer Review
 - ◆ Statement of Goals
 - ◆ Environmental Conditions
 - ◆ Proposed Project
 - ◆ Presentation Format
- ◆ Amendment Issues

The State Water Board first adopted the Ocean Plan in 1972, setting water quality standards to protect the beneficial uses of all ocean waters of California and prescribed programs to implement these standards. To ensure that the established standards are adequate and

continue to be protective of marine life and human health, both federal law and state law require that the Ocean Plan be reviewed at least once every three years.

The State Water Board most recently updated the Ocean Plan in 2009, which became effective in 2010. State Water Board staff has prepared this draft SED for the following amendments to the 2009 Ocean Plan:

- Amendment Issue 1: Amend Appendix III to include a question-driven monitoring framework encompassing core monitoring, regional monitoring and special studies;
- Amendment Issue 2: Remove language regarding the non-applicability of the Ocean Plan to vessel wastes and add language regarding the Control of Commercial Vessel Discharges;
- Amendment Issue 3: Replace Figure VIII-5 with an updated map, re-name Tables A - D, and make minor, non-substantive, administrative changes.

2.1 THE OCEAN PLAN BACKGROUND AND HISTORY

Background

The Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the California's coastal waters. It applies to point and non-point source discharges. The State Water Board adopts the Ocean Plan, and both the State Water Board and the six coastal Regional Water Quality Control Boards (Regional Water Boards) implement and interpret the Ocean Plan.

Currently, the 2009 Ocean Plan contains three chapters that describe beneficial uses to be protected, water quality objectives, and a program of implementation necessary for achieving water quality objectives (SWRCB 2009).

Chapter One of the Ocean Plan identifies the applicable beneficial uses of marine waters. These uses, as outlined in Chapter One, consist of preservation and enhancement of designated Areas of Special Biological Significance (ASBS), rare and endangered species, marine habitat, fish migration, fish spawning, shellfish harvesting, recreation, commercial and sport fishing, mariculture, industrial water supply, aesthetic enjoyment, and navigation.

Chapter Two establishes a set of narrative and numerical water quality objectives designed to protect beneficial uses. These objectives are based on bacterial, physical, chemical, and biological characteristics as well as radioactivity. The water quality objectives in Table B (One of the proposed amendments in this document is to change the name of Table B to Table 1) apply to all receiving waters under the jurisdiction of the Ocean Plan and are established for protection of aquatic life and for protection of human health from both noncarcinogens and carcinogens. Within Table B there are 21 objectives for protecting aquatic life, 20 objectives for protecting human health from noncarcinogens, and 42 objectives for protecting human health from exposure to carcinogens.

Chapter Three is divided into 10 sections: (A) General Provisions; (B) Table A Effluent Limitations; (C) Implementation Provisions for Table B; (D) Implementation Provisions for Bacterial Characteristics; (E) Implementation Provisions for Areas of Special Biological Significance; (F) Revision of Waste Discharge Requirements; (G) Compliance Schedules in

National Pollutant Discharge Elimination System (NPDES) Permits; (H) Monitoring Program; (I) Discharge Prohibitions; and, (J) State Water Board Exceptions to Plan Requirements.

Section A of Chapter 3 lists the considerations a discharger must address when designing a new discharge into marine waters. Section A also identifies how ASBS are designated and the application of U.S. Environmental Protection Agency's (U.S. EPA) Combined Sewer Overflow Policy.

Section B contains effluent limitations for the protection of marine waters. The effluent limitations listed in Table A apply to all publicly owned treatment works (POTWs) and to industries that do not have effluent limitation guidelines established by the U.S. EPA.

When a discharge permit is written, the water quality objectives for the receiving water are converted into effluent limitations that apply to discharges into California ocean waters. These effluent limitations are established on a discharge-specific basis depending on the initial dilution calculated for each outfall and the Table B objectives. Section C describes how Table B is to be implemented, including: calculation of effluent limitations; determination of mixing zones for acute toxicity objectives; toxicity testing requirements; selection of, deviations from, and use of, minimum levels; sample reporting protocols; compliance determination; pollutant minimization program; and, toxicity reduction requirements.

Section D provides implementation provisions for bacterial assessment and remedial action requirements. The requirements provide a basis for determining the occurrence and extent of any impairment of beneficial use due to bacterial contamination, generating information which can be used to develop an enterococcus standard, and providing the basis for remedial actions necessary to minimize or eliminate any impairment of a beneficial use.

Section E includes provisions concerning ASBS. It clearly states that waste shall not be discharged to ASBS and that such discharges shall be located a sufficient distance from ASBS to assure maintenance of natural water quality conditions in these areas. It also provides that Regional Water Boards may approve waste discharge requirements or recommend certification for limited-term (*i.e.*, weeks or months) activities in ASBS.

Sections F through J contain general provisions and sections on discharge prohibitions (*e.g.*, municipal or industrial sludges, bypassing, discharges into ASBS, and others). The provisions mandate that the Regional Water Boards require dischargers to monitor their discharges. Section I describes provisions for allowing exceptions to the Ocean Plan under special circumstances, provided that beneficial uses are protected and that the public interest is served.

History

The Ocean Plan was first formulated by the State Water Board as part of the State Policy for Water Quality Control. Changes in the Water Code in 1972 required the State Water Board to redraft its proposed Policy as a Water Quality Control Plan. At that time, it was the intent of the State Water Board to "...determine the need for revising the Plan to assure that it reflects current knowledge..." (SWRCB 1972). The Ocean Plan was reviewed and amended in 1978 to fulfill the intent of the State Water Board and the requirements of state and federal law for periodic review (SWRCB 1978). In 1983, a second review and revision were completed (SWRCB 1983a). Major changes to the Ocean Plan in 1983 included the addition of several chemicals to the receiving water limitations, modification of the bacterial standards, the addition of Tables C and D, and incorporation of parts of the 1972 and 1978 guideline documents.

In 1986, the CWC was amended to require the State Water Board to review the Ocean Plan at least once every three years and to develop toxicity bioassays for use in compliance monitoring of toxicity in whole effluents. The next triennial review was performed in 1987 and resulted in Ocean Plan amendments in 1988 and 1990. The 1988 amendments (SWRCB 1988) changed several beneficial use designations to be consistent with the State Water Board's standard list, revised water quality objectives in Table B, established a uniform procedure for granting exceptions to Ocean Plan objectives, and made several relatively minor changes.

The 1990 amendments (SWRCB 1990a; 1990b) added the following: (1) an appendix for standard monitoring procedures to implement Ocean Plan requirements; (2) a bacterial monitoring requirement for enterococcus; (3) new and/or revised water quality objectives to Table B for protection of aquatic life and human health; (4) definitions of acute and chronic toxicity to replace previous definitions; (5) a chronic toxicity objective to Table B; (6) a section on measuring toxicity to the appendix for implementing the acute toxicity requirement in Table A and the chronic toxicity receiving water objective in Table B; and (7) a list of seven critical life stage test protocols for use in measuring chronic toxicity.

Based on the 1992 Triennial Review, the State Water Board adopted a workplan that identified 24 high priority issues to be addressed (SWRCB 1992). The high priority issues fall into seven categories: (1) water quality objectives and regulatory implementation; (2) toxicity objectives and regulatory implementation; (3) bacterial standards; (4) administrative cleanup of the Ocean Plan format and terminology; (5) sediment quality objectives; (6) suspended solids regulation; and (7) non-point source control (SWRCB 1992).

In 1997, the State Water Board adopted two Ocean Plan amendments relating to issues raised during the 1992 Triennial Review: (1) the list in Appendix II of test protocols used to measure compliance with chronic toxicity objective was revised to reflect advances in conducting these tests, and (2) a number of minor changes were made to clarify and standardize terminology referring to water quality objectives and effluent limitations (SWRCB 1997a; 1997b).

Staff analysis and evaluation of the remaining high priority issues from the 1992 Triennial Review were carried over into the 1998-1999 Triennial Review, which also incorporated other issues. The State Water Board completed the 1998-1999 Triennial Review upon approval of the *Ocean Plan 1999-2000 Triennial Review Workplan*. The 1999-2000 Triennial Review identified 22 high priority issues to be addressed, which fall into five categories: (1) applicability of the Ocean Plan; (2) beneficial uses; (3) water quality objectives; (4) implementation; and (5) format and organization of the Ocean Plan (SWRCB 1999).

In 2000, the State Water Board adopted six Ocean Plan amendments relating to issues raised during the 1999-2000 Triennial Review and incorporated them into the 2001 Ocean Plan (SWRCB 2001). These issues included: (1) replacement of the acute toxicity effluent limit in Table A with an acute toxicity water quality objective; (2) revision of chemical water quality objectives for protection of marine life and human health; (3) compliance determination for chemical water quality objectives; (4) change the format of the Ocean Plan; (5) development of special protection for water quality and designated uses in ocean waters of California; and (6) administrative changes to the Ocean Plan (SWRCB 2000; 2001). The 2001 Ocean Plan became effective December 3, 2001 when it was approved by the U.S. EPA (U.S. EPA 2001).

In 2004, amendments were made for the choice of indicator organisms for water-contact bacterial standards which were added to the 2001 Ocean Plan (SWRCB 2004). In 2005, the

State Water Board adopted the following amendments to the 2004 Ocean Plan: (1) Changes were made to the language in Chapter III (Program of Implementation) of the Ocean Plan; (2) Additional reasonable potential procedures were added in the new Appendix VI; (3) Names of specific ASBS were changed and the classification of ASBS as SWQPAs per the Public Resources Code was incorporated; (4) and amendments were made so that the Ocean Plan would state that exceptions (including non-ASBS related exceptions) would be reviewed during the Triennial Review and an appendix was added listing all current exceptions to the Ocean Plan (SWRCB 2005).

In 2005, the State Water Board directed staff to review a series of issues identified in the 2005-2008 Triennial Review Workplan. Certain issues dealt with improving the clarity and usefulness of the Ocean Plan by correcting typographical and grammatical errors, correcting anachronisms, adding maps, and reflecting current laws and regulations.

Amendments made for the 2009 Ocean Plan included non-substantive changes, such as: (1) the clarification that metals are expressed as total recoverable metals; (2) the removal of Section III (F)(1) on compliance schedules; (3) the addition of Section III (G)(1) on Compliance Schedules in National Pollution Discharge Elimination System (NPDES) Permits; (4) the correction of toxicity definitions and references in Appendix 1; (5) the addition of maps of California's ocean waters, bays, and estuaries; (6) and the update of the list of exceptions in Appendix VII (SWRCB 2009). The 2009 Ocean Plan became effective October 8, 2010 when it was approved by the U.S. EPA (U.S. EPA 2010).

In March of 2011, the 2011-2013 Triennial Review Workplan was adopted by the State Water Board. The Workplan identified six very high priority issues, two of which include Model Monitoring and Vessel Discharge. The Workplan also identified ten high priority issues, one of which included the Nonsubstantive Changes.

2.2 REGULATORY BACKGROUND

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne), enacted in 1969 as division 7 of the Water Code, is the primary water quality law in California.ⁱ Porter-Cologne addresses two primary functions: water quality control planning and waste discharge regulation. Porter-Cologne is administered regionally, within a framework of statewide coordination and policy. The state is divided into nine regions, each governed by a Regional Water Board. The State Legislature, in adopting Porter-Cologne, directed that California's waters "shall be regulated to attain the highest water quality which is reasonable".ⁱⁱ

The State Water Board oversees and guides the Regional Water Boards through several activities, including the adoption of statewide water quality control plans and state policies for water quality control.^{iii iv} The State Water Board-adopted Ocean Plan, for example, designates ocean waters for a variety of beneficial uses, including rare and endangered species, marine habitat, fish spawning and migration and other uses (including industrial water supply), and establishes water quality objectives to protect beneficial uses.^v The State Water Board is also charged with adopting state policies for water quality control, which may consist of principles or guidelines deemed essential by the State Water Board for water quality control.^{vi}

Under Porter-Cologne, the State and Regional Water Boards regulate waste discharges that could affect water quality through waste discharge requirements.^{vii} In addition, the state is authorized to issue NPDES permits to point source dischargers of pollutants to navigable waters. In 1972, the California Legislature amended Porter-Cologne to provide the state the necessary authority to implement an NPDES permit program in lieu of a U.S. EPA-administered program under the federal Clean Water Act (CWA).^{viii} To ensure consistency with the CWA requirements, Porter-Cologne requires that the Water Boards issue and administer NPDES permits such that all applicable CWA requirements are met.^{ix} The State Water Board is designated as the state water pollution control agency under the CWA and is authorized to exercise any powers accordingly delegated to the State.^{x xi}

2.2.2 General Overview of Legal Requirements for Ocean Plan Amendments

In 1972, Congress enacted the CWA to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under section 303(c) of the CWA, the states are primarily responsible for the adoption and periodic review of water quality standards for all waters within their boundaries. The State Water Board is designated as the state water pollution control agency for all purposes under the CWA.

The Water Code (commencing with section 13160) requires the State Water Board to formulate and adopt a water quality control plan for the ocean waters of the state, known as the Ocean Plan. The Ocean Plan sets forth standards to protect all ocean waters of California and prescribes programs to implement these standards. The standards include the designated beneficial uses of the ocean waters, narrative and numeric objectives to protect these uses, and the State's Antidegradation Policy. The program of implementation includes waste discharge limitations, monitoring, and enforcement. The Ocean Plan provides the basis for regulation of wastes discharged into the State's coastal waters, and applies to both point and non-point source discharges. The State Water Board and the six coastal Regional Water Boards implement and interpret the Ocean Plan.

The State Water Board adopted the Ocean Plan in 1972 and has periodically revised it subsequently. Both federal law [CWA § 303(c)(1)] and State law [Wat. Code § 13170.2, subd. (b)] require that ocean water quality standards be reviewed at least once every three years to ensure the continued adequacy of the standards. Triennial reviews are comprehensive and include a public hearing to identify issues to be addressed. The State Water Board evaluates all available information at the hearing to determine whether revisions to the plans are needed and the nature of any necessary revisions. The Ocean Plan was most recently updated in 2009.

Amendments to the Ocean Plan follow state and federal requirements for public participation and state requirements for environmental and economic analysis. Substantive amendments are subject to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq. [see Cal. Code Regs., tit. 14, § 15061, subd. (b)(3)]. The State Water Board must consider the factors specified in Water Code section 13241, including costs, when adopting or revising water quality objectives. In addition, the State Water Board must include a program of implementation for new or revised water quality objectives (Wat. Code §§ 13170, 13242). The regulatory provisions of all Ocean Plan amendments must be approved by the state Office of Administrative Law (OAL). Amendments that include the adoption or modification of a new or existing water quality standard or general policy affecting the application or implementation of standards must also be approved by U.S. EPA in order to be effective. On September 15, 2009

the State Water Board adopted Resolution Number 2009-0072, proposing amendments to the 2005 Ocean Plan. The amendments were approved by OAL on March 10, 2010.

2.2.3 Compliance with California Water Code Sections 13241 and 13242

In addition to the factors assessed under CEQA, Water Code section 13241 requires the assessment of specific factors when the State or Regional Water Boards establish water quality objectives to ensure the reasonable protection of beneficial uses. The factors to be considered include:

- ◆ Past, present, and probable future beneficial uses of water
- ◆ Environmental characteristics of the hydrographic unit under consideration
- ◆ Water quality conditions that could reasonably be achieved through control of all factors affecting water quality
- ◆ Economic considerations
- ◆ The need for developing housing within the region
- ◆ The need to develop and use recycled water

Water Code section 13242 requires the Water Boards to formulate a program of implementation for the water quality objective under consideration by the Board. The program of implementation for achieving water quality objectives shall include, but not be limited to:

- ◆ A description of the nature of actions that is necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private
- ◆ A time schedule for the actions to be taken
- ◆ A description of surveillance to be undertaken to determine compliance with objectives.

2.3 CEQA ANALYSIS AND IMPACT OF PROPOSED POLICY

The State Water Board is the lead agency for this project under CEQA, and is responsible for preparing environmental documentation for the proposed Policy.^{xii} State agencies are subject to the environmental impact assessment requirements of the CEQA. However, CEQA authorizes the Secretary of the Resources Agency to exempt specific State regulatory programs from the requirements to prepare Environmental Impact Reports (EIRs), Negative Declarations, and Initial Studies, if certain conditions are met (Pub. Resources Code, § 21080.5). The Water Quality Control (Basin)/208 Planning Program of the State Water Board has been certified by the Secretary for Resources (Cal. Code Regs., tit. 14, § 15251, subd. (g)). As such, the plan, with supporting documentation, may be submitted in lieu of an EIR as long as the appropriate environmental information is contained therein (Pub. Resources Code, § 21080.5, subd. (a)). Accordingly, the State Water Board prepares a Substitute Environmental Documentation (SED) in lieu of the more commonly used EIR.

Despite this limited exemption, the State Water Board must still comply with CEQA's overall objectives, which are to: 1) inform the decision makers and public about the potential significant environmental effects of a proposed project; 2) identify ways that environmental damage may be mitigated; 3) prevent significant, avoidable damage to the environment by requiring changes in projects, through the use of alternative or mitigation measures when feasible; and 4) disclose to the public why an agency approved a project if significant effects are involved.^{xiii}

State Water Board regulations (Cal. Code Regs., tit. 23, § 3777) require that a document prepared under its certified regulatory program must include:

- ◆ A brief description of the proposed project;
- ◆ An identification of any significant or potentially significant adverse environmental impacts of the proposed project;
- ◆ An analysis of reasonable alternatives to the proposed project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and
- ◆ An environmental analysis of the reasonably foreseeable methods of compliance.

A Draft SED is prepared by the State Water Board and circulated for public review and comment. Responses to comments and consequent revisions to the information in the Draft SED are subsequently presented in a Draft Final SED (Draft FSED) for consideration by the State Water Board. After the State Water Board has certified the document as adequate, the title of the document becomes the Final SED (FSED).

2.4 SCIENTIFIC PEER REVIEW

In 1997, Section 57004 was added to the California Health and Safety Code which calls for external scientific peer review of the scientific basis for any rule proposed by any board, office, or department within the California Environmental Protection Agency (Cal/EPA). Scientific peer review also helps strengthen regulatory activities, establishes credibility with stakeholders, and ensures that public resources are managed effectively. [See Sections 3.0, 4.0, and 5.0]

2.5 STATEMENT OF GOALS

The goal is to amend the 2009 Ocean Plan by addressing certain concerns introduced to the State Water Board in the 2005-2008 Triennial Review Workplan of the Ocean Plan as high priority and again in the 2011-2013 Triennial Review Workplan of the Ocean Plan as both very high and high priority issues. The very high priority issues from the 2011-2013 Triennial Review Workplan which are addressed with proposed amendments in this document are Model Monitoring and Control of Commercial Vessel Discharges and Invasive Species; and the high priority issue addressed as an amendment in this document is Nonsubstantive Changes.

2.6 ENVIRONMENTAL CONDITIONS

2.6.1 Environmental Setting

The following environmental setting information is applicable to the three proposed amendments in this document.

Maps of the coastal and ocean features along California's coast are in the 2009 Ocean Plan in Appendix VIII. These maps present NPDES ocean outfalls, county and regional board boundaries, MPA, National Marine Sanctuaries (NMS), and ASBS. The California Department of Fish and Game's website contains additional information about California's marine region and can be accessed at: <http://dfg.ca.gov/marine>.

The state is divided into nine regions, each governed by a Regional Water Board. Six of the Regional Water Boards regulate discharges on California's coast.

North Coast (Region 1)

The North Coast Region (See Figures 1 - 3) comprises all regional basins, including Lower Klamath Lake and Lost River Basins, draining into the Pacific Ocean from the California-Oregon state line southerly to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties.

Two natural drainage basins, the Klamath River Basin and the North Coastal Basin, divide the Region. The Region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties. It encompasses a total area of approximately 19,390 square miles, including 340 miles of coastline and remote wilderness areas, as well as urbanized and agricultural areas.

Beginning at the Smith River in northern Del Norte County and heading south to the Estero de San Antonio in northern Marin County, the Region encompasses a large number of major river estuaries, including the Klamath River, Redwood Creek, Little River, Mad River, Eel River, Noyo River, Navarro River, Elk Creek, Gualala River, Russian River, and Salmon Creek. Northern Humboldt County coastal lagoons include Big Lagoon and Stone Lagoon (See Figure 2). The two largest enclosed bays in the Region are Humboldt Bay and Arcata Bay in Humboldt County (See Figure 2). Another enclosed bay, Bodega Bay, is located in Sonoma County near the southern border of the Region (See Figure 3).

Tidelands and marshes are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasturelands also provide supplemental food for many birds, including small pheasant populations. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas. Major components of the economy are tourism and recreation, logging and timber milling, aggregate mining, commercial and sport fisheries, sheep, beef and dairy production, and vineyards and wineries. The largest urban centers are Eureka in Humboldt County and Santa Rosa in Sonoma County.

There is one existing MPA in Humboldt County, eight existing MPAs in Mendocino County, and nine existing MPAs in Sonoma County.^{xiv} Eight ASBS are located in the North Coast Region: Jughandle Cove (#1), Del Mar Landing (#2), Gerstle Cove (#3), Bodega (#4), Saunders Reef (#5), Trinidad Head (#6), King Range (#7), and Redwoods National Park (#8). (See Figures 2 and 3).

The Gulf of the Farallones National Marine Sanctuary (GNFMS), designated in 1981, is located in the North Coast, San Francisco Bay, and Central Coast Regions (Regions 1, 2, and 3). GNFMS spans 1,279 square-miles (966 square-nautical-miles) just northwest of San Francisco Bay. (Refer to Section 2.1.2 for more information about the Farallon Islands and GNFMS. See Figure 3)

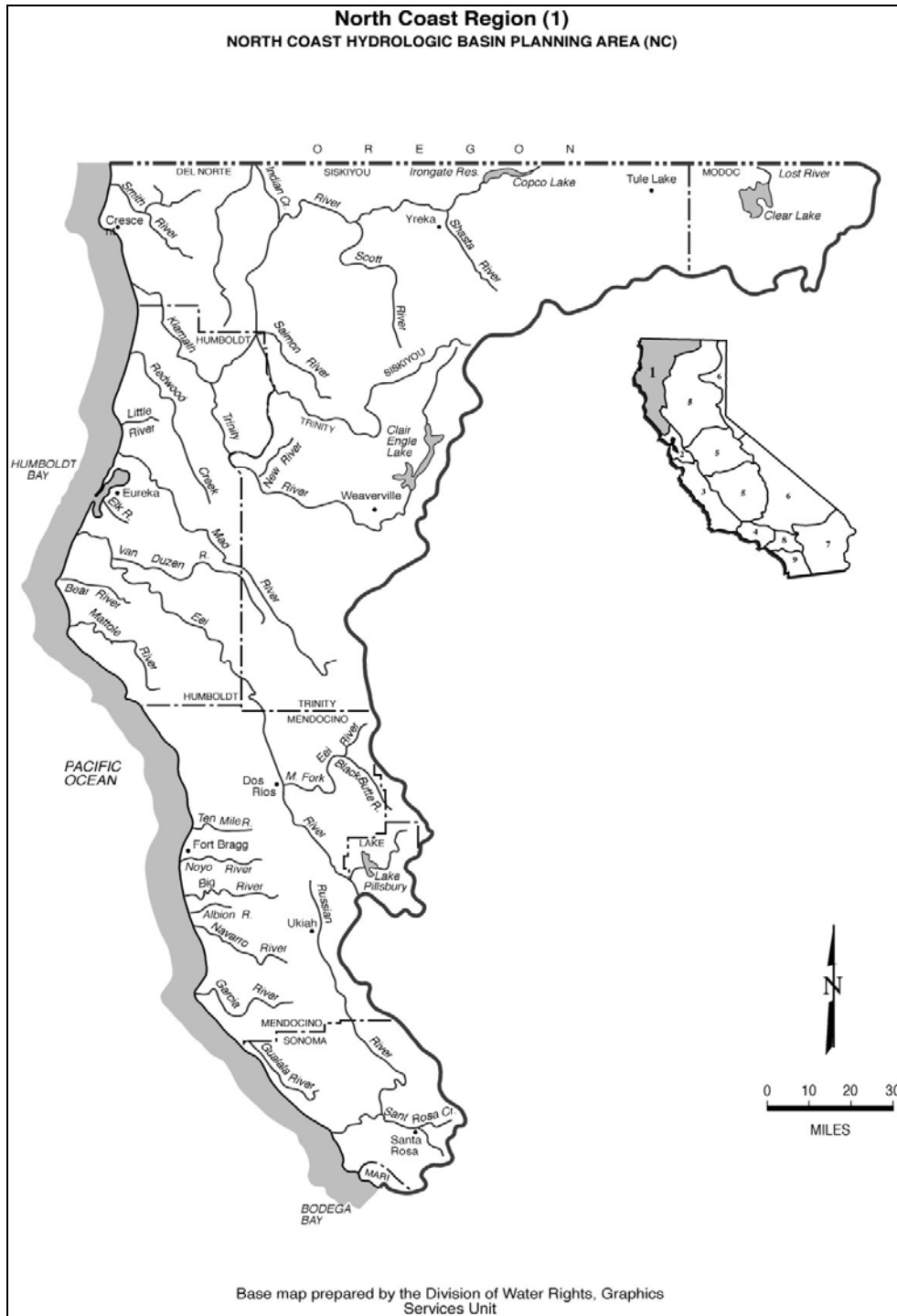


Figure 1. Hydrology of Region 1.

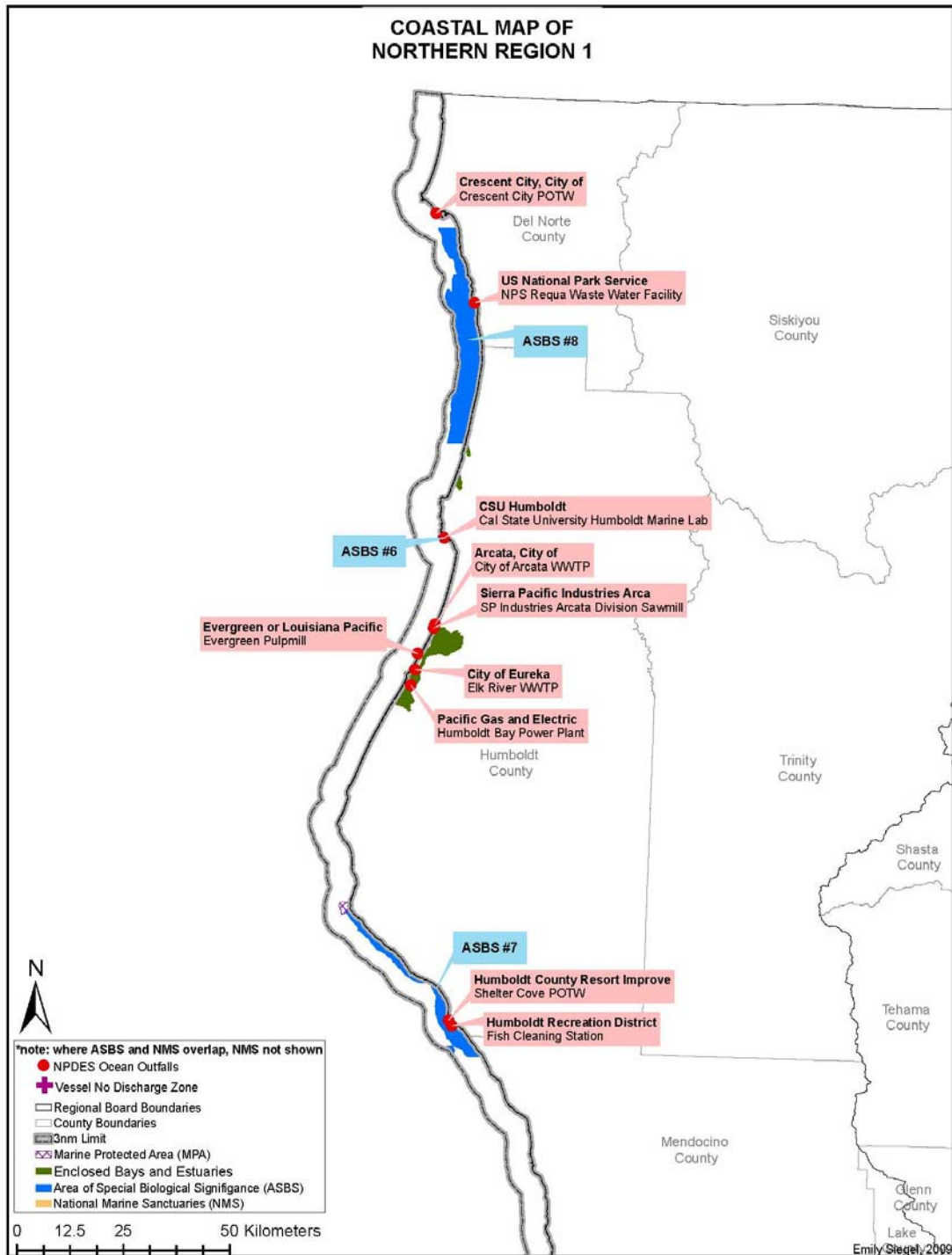


Figure 2. Coastal and ocean features of Region 1.

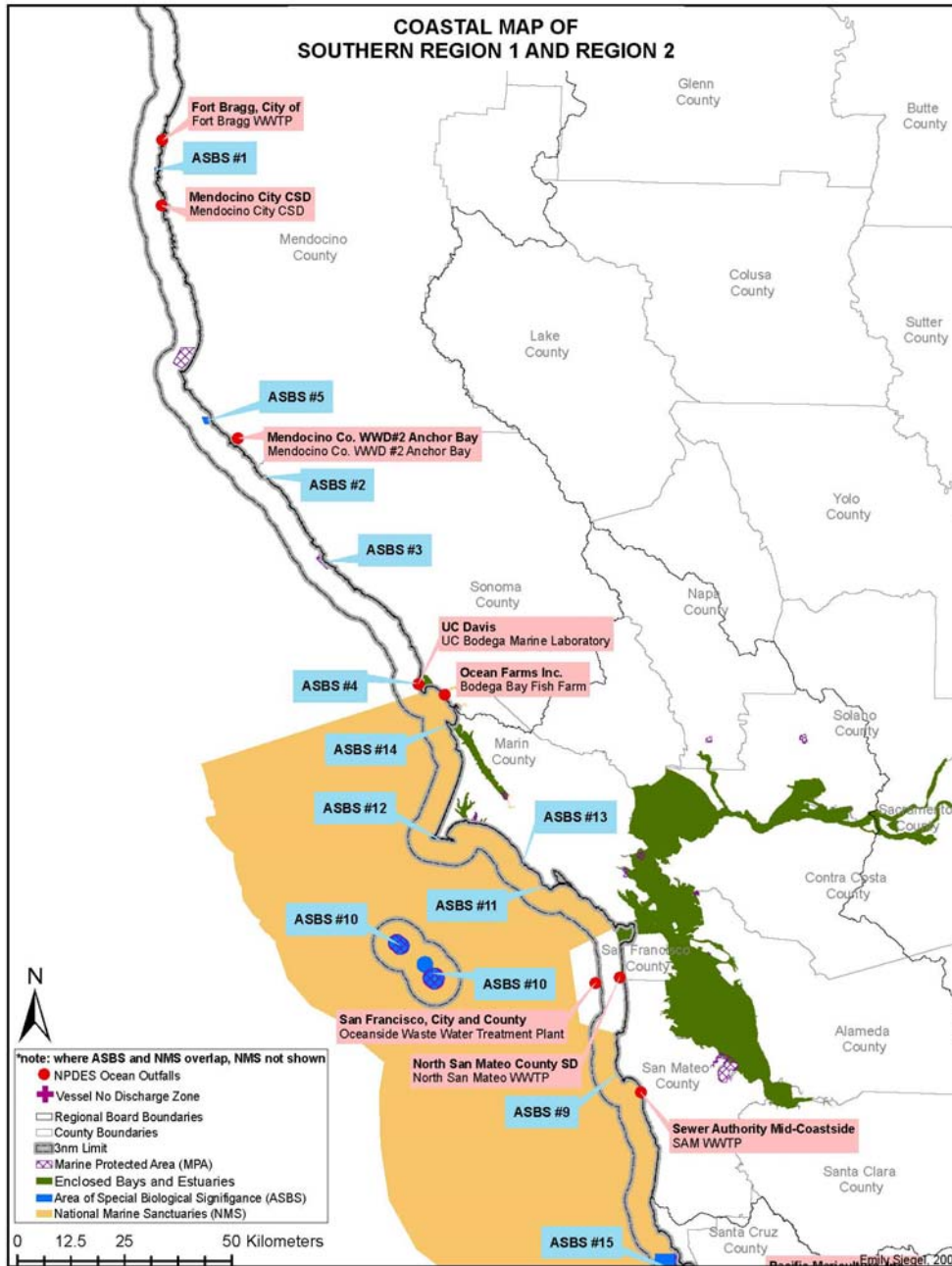


Figure 3. Coastal features of southern Region 1 and of Region 2

San Francisco Bay (Region 2)

The San Francisco Bay Region, (see Figures 3 and 4) comprises San Francisco Bay, Suisun Bay, from Sacramento River and San Joaquin River westerly from a line which passes between Collinsville and Montezuma Island and follows thence the boundary common to Sacramento and Solano Counties and that common to Sacramento and Contra Costa Counties to the westerly boundary of the watershed of Markley Canyon in Contra Costa County, all basins draining into the bays and rivers westerly from this line, and all basins draining into the Pacific Ocean between the southerly boundary of the north coastal region and the southerly boundary of the watershed of Pescadero Creek in San Mateo and Santa Cruz Counties.

The Region comprises most of the San Francisco Estuary to the mouth of the Sacramento-San Joaquin Delta. The San Francisco Estuary conveys the waters of the Sacramento and San Joaquin Rivers to the Pacific Ocean. The Bay is located on the north central coast of California and functions as the only drainage outlet for waters of the Central Valley. It also marks a natural topographic separation between the northern and southern coastal mountain ranges.

The Region's waterways, wetlands, and bays form the centerpiece of the fourth largest metropolitan area in the United States, including all or major portions of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties. The San Francisco Bay Regional Water Board has jurisdiction over the part of the San Francisco Estuary that includes all of the San Francisco Bay segments extending east to the Delta (Winter Island near Pittsburg). The San Francisco Estuary sustains a highly dynamic and complex environment.

Within each section of the Bay system lie deepwater areas that are adjacent to large expanses of very shallow water. Salinity levels in the Bay range from hypersaline to fresh water, and water temperature varies widely. The Bay system's deepwater channels, tidelands, marshlands, fresh water streams, and rivers provide a wide variety of habitats within the Region. Coastal embayments including Tomales Bay and Bolinas Lagoon are also located in this Region. The Central Valley Regional Water Board has jurisdiction over the Delta and rivers extending further eastward.

The Sacramento and San Joaquin Rivers enter the Bay system through the Delta at the eastern end of Suisun Bay and contribute almost all of the fresh water inflow into the Bay. Many smaller rivers and streams also convey fresh water to the Bay system. The rate and timing of these fresh water flows are among the most important factors influencing physical, chemical, and biological conditions in the Estuary. Flows in the Region are highly seasonal, with more than 90 percent of the annual runoff occurring during the winter rainy season between November and April.

The San Francisco Estuary is made up of many different types of aquatic habitats that support a great diversity of organisms. Suisun Marsh in Suisun Bay is the largest brackish-water marsh in the United States. San Pablo Bay is a shallow embayment strongly influenced by runoff from the Sacramento and San Joaquin Rivers. The Central Bay is the portion of the Bay most influenced by oceanic conditions. The South Bay, with less freshwater inflow than the other portions of the Bay, acts more like a tidal lagoon. Together these areas sustain rich communities of aquatic life and serve as important wintering sites for migrating waterfowl and spawning areas for anadromous fish.

Other bays within the Region 2 boundaries include Tomales Bay, Bolinas Bay and Half Moon Bay.

Approximately 20 miles (32 km) south from the coast of Point Reyes, lie the Farallon Islands. The islands are northwest of San Francisco Bay, located within the boundaries of the City and County of San Francisco, the San Francisco Bay Regional Water Board, and GFNMS (See Figure 3). The boundaries of the GFNMS also extend into the North and Central Coast Regions. The sanctuary is comprised of several ecosystems: coastal beaches, open ocean, near-shore tidal flats, rocky intertidal, subtidal reefs and estuarine wetlands. The Farallon Islands serve as feeding and breeding grounds for at least twenty-five endangered or threatened species and at least thirty-six federally-protected marine mammal species, including

one of the few remaining populations of Stellar sea lions. Other pinnipeds known to utilize the islands as breeding grounds and a haul out sites are the northern elephant seal, harbor seal, California sea lion, and the northern fur seal. Twelve species of seabirds and shorebirds, making up over a quarter-million individuals, nest on the islands. These species of birds include the western gull, Brandt's cormorant, pelagic cormorant, double-crested cormorant, pigeon guillemot, common murre, Cassin's auklet, tufted puffin, black oystercatcher, rhinoceros auklet, ashy storm-petrel, and Leach's storm-petrel. One of the most significant white shark populations on the planet is known to utilize the waters surrounding the islands for hunting. Species of cetaceans that are found in the surrounding waters consist of gray whales, blue whales, and humpback whales. Public access to the island is highly restricted and there is no human settlement in GFNMS except for the presence of research scientists and a U.S. Coast Guard lighthouse facility on the Southeast Island. Between 1946 and 1970, over 47,000 55-gallon drums, concrete blocks and other containers of low-level radioactive waste were dumped onto the ocean floor off the California coast, in and near the GFNMS. There were three designated dumping sites for the containers, but studies conducted by the United States Geological Survey (USGS) conclude that they litter an area of sea floor of at least 1,400 km². This area is known as the Farallon Island Radioactive Waste Dump. ^{xv xvi xvii xviii xix}

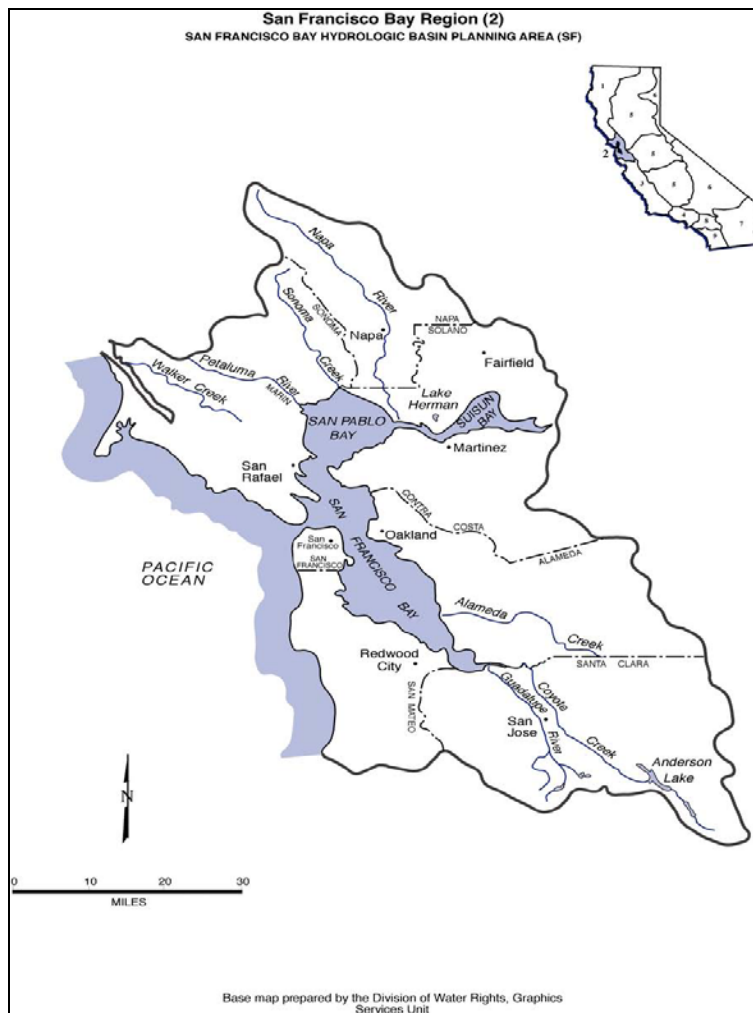


Figure 4. Hydrology of Region 2.

There are twelve MPAs in Marin County (two of the MPAs are estuarine), five in San Francisco County, one estuarine MPA in Solano County, two estuarine MPAs in Alameda County, and seven MPAs in San Mateo County. Five of the seven MPAs in San Mateo county are located within the San Francisco Bay Regional Water Board boundaries, two of which are estuarine MPAs, and the other two are located within the Central Coast Regional Water Board boundaries. Six ASBS are located in the San Francisco Bay Region: James V. Fitzgerald (#9), Farallon Islands (#10), Duxbury Reef (#11), Point Reyes Headlands (#12), Double Point (#13), and Bird Rock (#14) (See Figure 3).

Central Coast (Region 3)

The Central Coast Region (See Figures 5 - 7) comprises all basins draining into the Pacific Ocean from the southerly boundary of the watershed of Pescadero Creek in San Mateo and Santa Cruz Counties to the southeasterly boundary, located in the westerly part of Ventura County, of the watershed of Rincon Creek.

The Region extends over a 300 mile (483 km) long by 40 mile (64 km) wide section of the state's central coast. Its geographic area encompasses all of Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara Counties as well as the southern one-third of Santa Clara County, and small portions of San Mateo, Kern, and Ventura Counties. Included in the Region are urban areas such as the Monterey Peninsula and the Santa Barbara coastal plain; prime agricultural lands such as the Salinas, Santa Maria, and Lompoc Valleys; National Forest lands; extremely wet areas such as the Santa Cruz Mountains; and arid areas such as the Carrizo Plain.

Water bodies in the Central Coast Region are varied. Enclosed bays and harbors in the region include Morro Bay, Elkhorn Slough, Tembladero Slough, Santa Cruz Harbor, Moss Landing Harbor, Monterey Harbor, Port San Luis, and Santa Barbara Harbor. Several small estuaries also characterize the region, including the Santa Maria River Estuary, San Lorenzo, River Estuary, Big Sur River Estuary, and many others. Major rivers, streams, and lakes include San Lorenzo River, San Benito River, Pajaro River, Salinas River, Santa Maria River, Cuyama River, Estrella River and Santa Ynez River, San Antonio Reservoir, Nacimiento Reservoir, Twitchel Reservoir, and Cuchuma Reservoir.

Año Nuevo State Park is located in San Mateo County, within the Central Coast Region, and includes Año Nuevo Island and properties on the western slope of the coast range, inland from Año Nuevo Point^{xx} (See Figure 6). Four perennial streams at the park support steelhead trout and coho salmon. Año Nuevo Island and adjacent mainland beaches are considered to be one of the most important pinniped rookery and resting areas in central and northern California. Pinnipeds found at Año Nuevo include: Northern elephant seals, Stellar's sea lions, California sea lions, and harbor seals. Over 300 species of marine invertebrates have been recorded at Año Nuevo, including an unusual number of rare species. Over 20,000 people visit Año Nuevo State Park annually.^{xxi}

Three National Marine Sanctuaries are located in the Central Coast Region: Channel Islands National Marine Sanctuary (CINMS), Monterey Bay National Marine Sanctuary (MBNMS), and GFNMS. GFNMS is also located in the San Francisco Bay and North Coast Regions (refer to 2.1.2 for more information about GFNMS).

MBNMS, designated in 1992, lies between Marin and Cambria. The sanctuary has a shoreline length of 276 miles (444 km), averages a distance of 30 miles (48 km) from shore, and includes

6,094 square miles (15,783 square km) of ocean. MBNMS is the largest Marine Sanctuary and includes the largest kelp forest in the United States.^{xxii} The MPA network within MBNMS consists of 72 zoned areas and 13 different zone types.^{xxiii} Also encompassed in MBNMS is the Monterey Bay Canyon which extends off the coast of Moss Landing about 2.4 miles (almost 4km) in depth at its deepest point. Monterey Bay Canyon is North America's largest underwater canyon and the closest-to-shore deep ocean environment in the continental United States. It is home to one of the most diverse marine ecosystems in the world, including 33 species of marine mammals, 94 species of seabirds, 345 species of fishes, and numerous invertebrates and plants.^{xxiv}

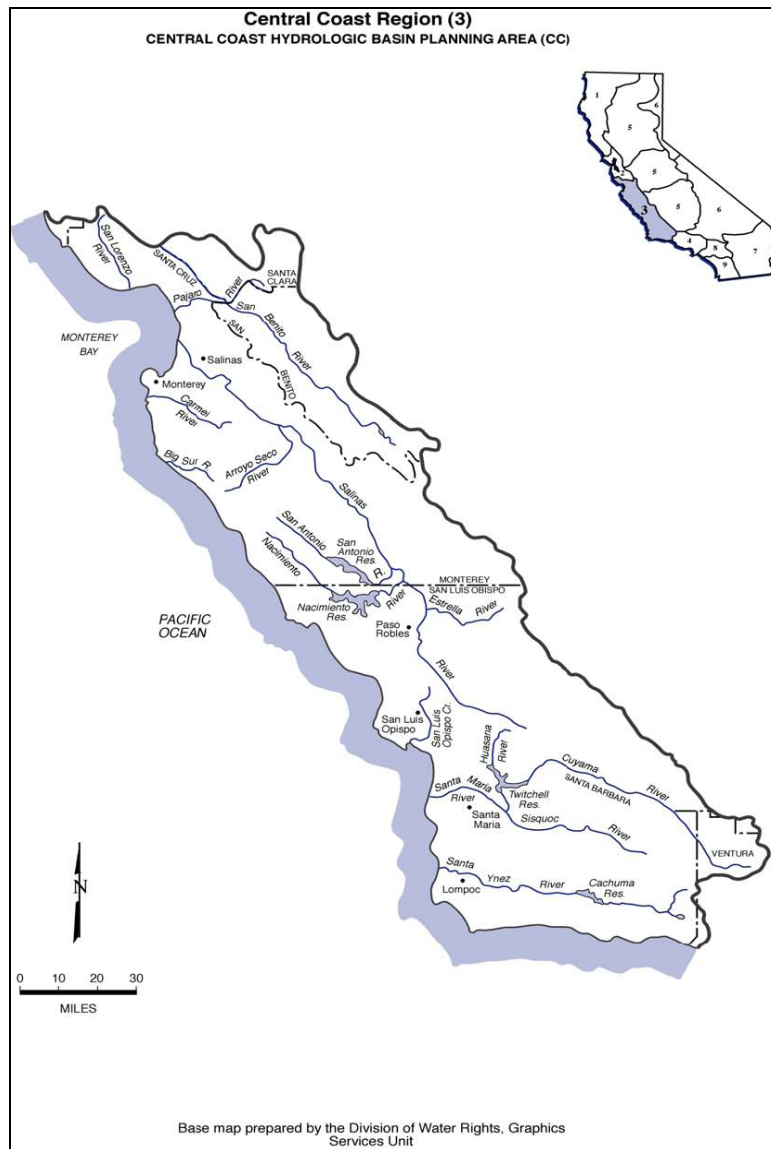


Figure 5. Hydrology of Region 3.

The Southern Sea Otter is protected under the federal Endangered Species Act as a threatened species. Most of its current range lies within the coastal areas of Region 3. The Southern Sea Otter's population, according to the U.S. Geological Survey, appears to be declining for the second consecutive year as of 2010, despite decades of federal and state protection and a decade of previous population growth.

Sea otters are active predators that rely on near-shore coastal waters. As a result, they are constantly exposed to many stressors, such as chemicals and pathogens from coastal water pollution, ingestion of toxin-contaminated prey, and reduced food abundance. Chronic exposure to multiple stressors could make otters more susceptible to illness and injury, and lead to a greater chance of death.^{xxv}

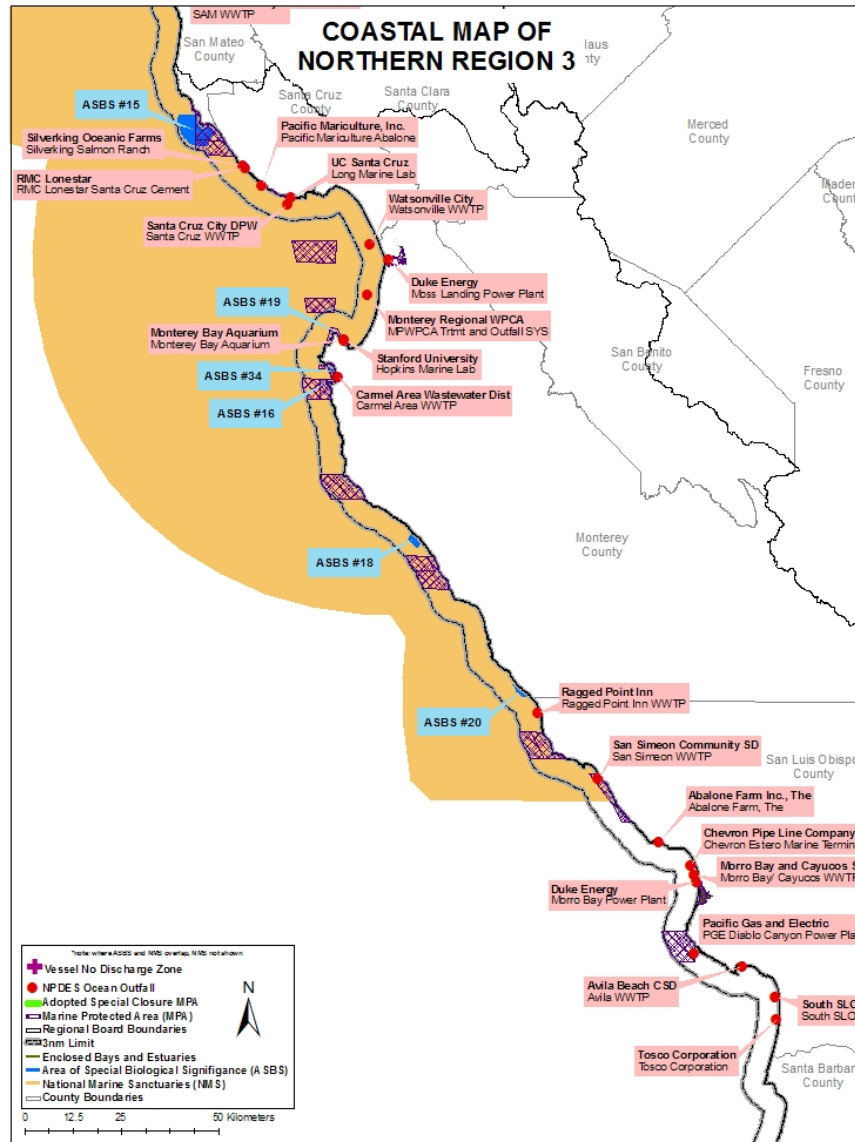


Figure 6. Coastal features of northern Region 3.

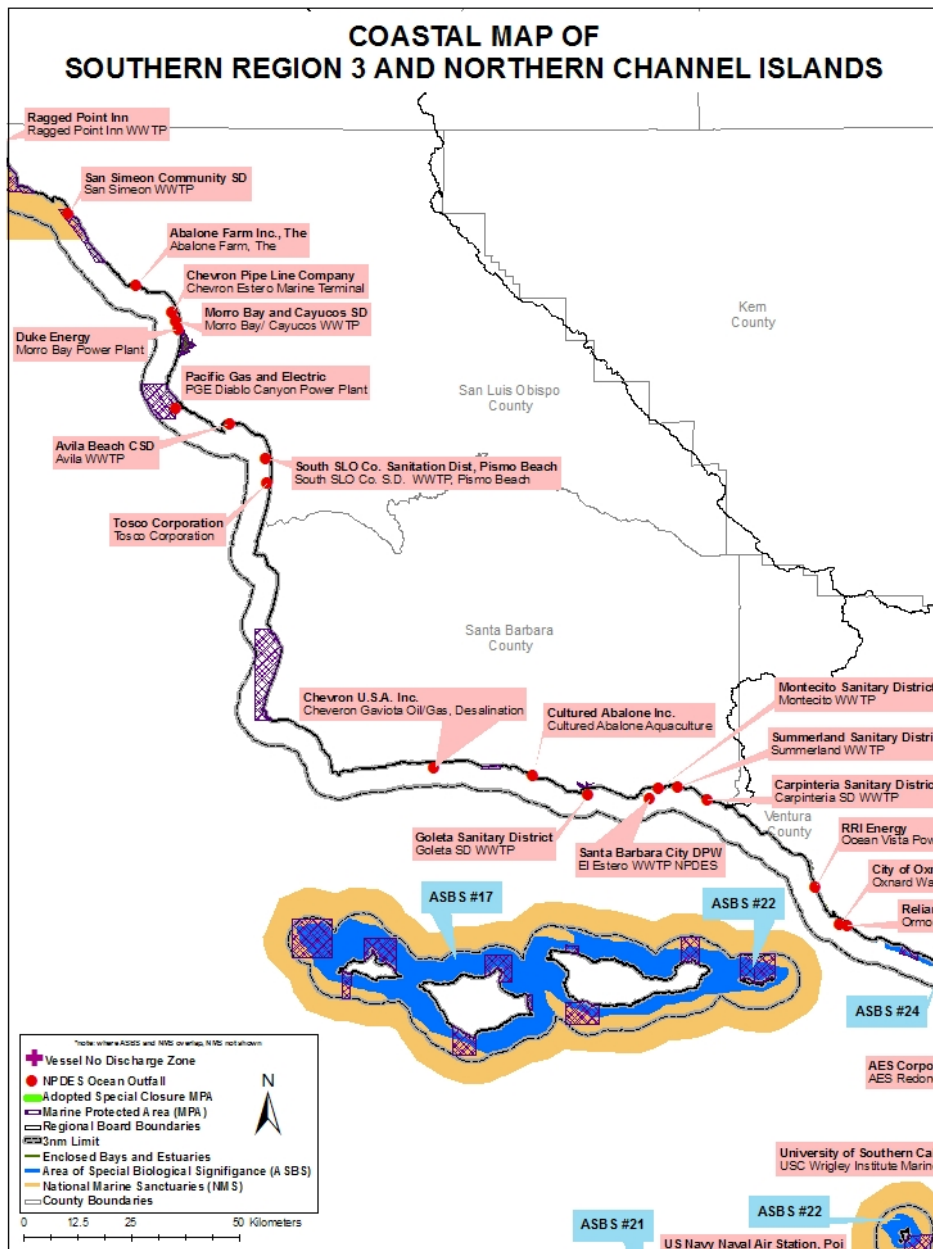


Figure 7. Coastal features of Southern Region 2 and the Northern Channel Islands.

The Channel Islands are located off the southern California coast (See Figures 7 and 9) and are comprised of eight islands, separated into two groups: the northern and southern Channel Islands. San Miguel, Santa Rosa, and Santa Cruz Islands are part of the northern Channel Islands and are the three Channel Islands within the Region 3 boundaries. The three islands are part of the Channel Islands National Park, as well as part of CINMS. Santa Cruz Island is California's largest island at 62,000 acres. Found on the island are large colonies of nesting seabirds, breeding seals and sea lions, and other diverse marine animals. The island boasts

one of the largest known sea caves in the world, Painted Cave. Santa Rosa Island is the second largest island off the coast of California at approximately 53,000 acres in size. Santa Rosa Island hosts colonies of seabirds, seals, and sea lions. San Miguel Island is approximately 9,325 acres and includes 27 miles (44 km) of isolated coastline. Up to five different pinniped species and 30,000 individuals can be found at Point Bennett, one of the largest concentrations of wildlife in the world. In the waters surrounding San Miguel, other marine mammals include dolphins and porpoises, gray whales, orcas, and blue whale. Also present in the spring and summer around San Miguel are western gulls, California brown pelicans, cormorants, and black oystercatchers. Cassin's auklets nest on nearby Prince Island.^{xxvi}

CINMS, designated in 1980, encompasses approximately 1,470 square-miles (1,110 square-nautical-miles) of water surrounding Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending to six nautical-miles offshore around each of the five islands. Changes to and expansion of the boundaries of CINMS are currently being studied and considered^{xxvii}. Of the 41 MPAs in the Region, 13 are located in CINMS: 11 marine reserves where all take and harvest is prohibited and two marine conservation areas that allow limited take of lobster and pelagic fish. The MPA network in CINMS encompasses 318 square-miles (241 square-nautical-miles) making it the largest network off of the continental United States.^{xxviii}

Included in the MPA network of the entire Central Coast Region, the number of MPA in each county are as follows: two MPAs in San Mateo County, 17 MPAs in Monterey County, 8 MPAs in San Luis Obispo County, and 14 MPAs in Santa Barbara County (one of which is estuarine). Located in the Central Coast Region are 7 ASBS: Año Nuevo (#15); Pacific Grove (#19); Carmel Bay (#34); Point Lobos (#16); Julia Pfeiffer Burns (#18); San Miguel, Santa Rosa, and Santa Cruz Islands (#17); and Salmon Creek Coast (#20).

Los Angeles (Region 4)

The Los Angeles Region, (see Figures 8 and 9) comprises all basins draining into the Pacific Ocean between the southeasterly boundary, located in the westerly part of Ventura County, of the watershed of Rincon Creek and a line which coincides with the southeasterly boundary of Los Angeles County from the ocean to San Antonio Peak and follows thence the divide between San Gabriel River and Lytle Creek drainages to the divide between Sheep Creek and San Gabriel River drainages.

The Region encompasses all coastal drainages flowing into the Pacific Ocean between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente). In addition, the Region includes all coastal waters within three miles of the continental and island coastlines. Two large deepwater harbors (Los Angeles and Long Beach Harbors) and one smaller deepwater harbor (Port Hueneme) are contained in the Region. There are small craft marinas within the harbors, as well as tank farms, naval facilities, fish processing plants, boatyards, and container terminals. Several small-craft marinas also exist along the coast (Marina del Ray, King Harbor, Ventura Harbor); these contain boatyards, other small businesses, and dense residential development.

Large, primarily concrete-lined rivers (Los Angeles River, San Gabriel River) lead to unlined tidal prisms which are influenced by marine waters. Salinity may be greatly reduced following rains since these rivers drain large urban areas composed of mostly impermeable surfaces. Some of these tidal prisms receive a considerable amount of freshwater throughout the year

from publicly-owned treatment works that discharge tertiary-treated effluent and industrial effluent.

Santa Monica Bay, which includes the Palos Verdes Shelf, dominates a large portion of the open coastal water bodies in the Region. The Region's coastal water bodies also include the areas along the shoreline of Ventura County and the waters surrounding the five offshore islands in the Region.



Figure 8. Hydrology of Region 4.

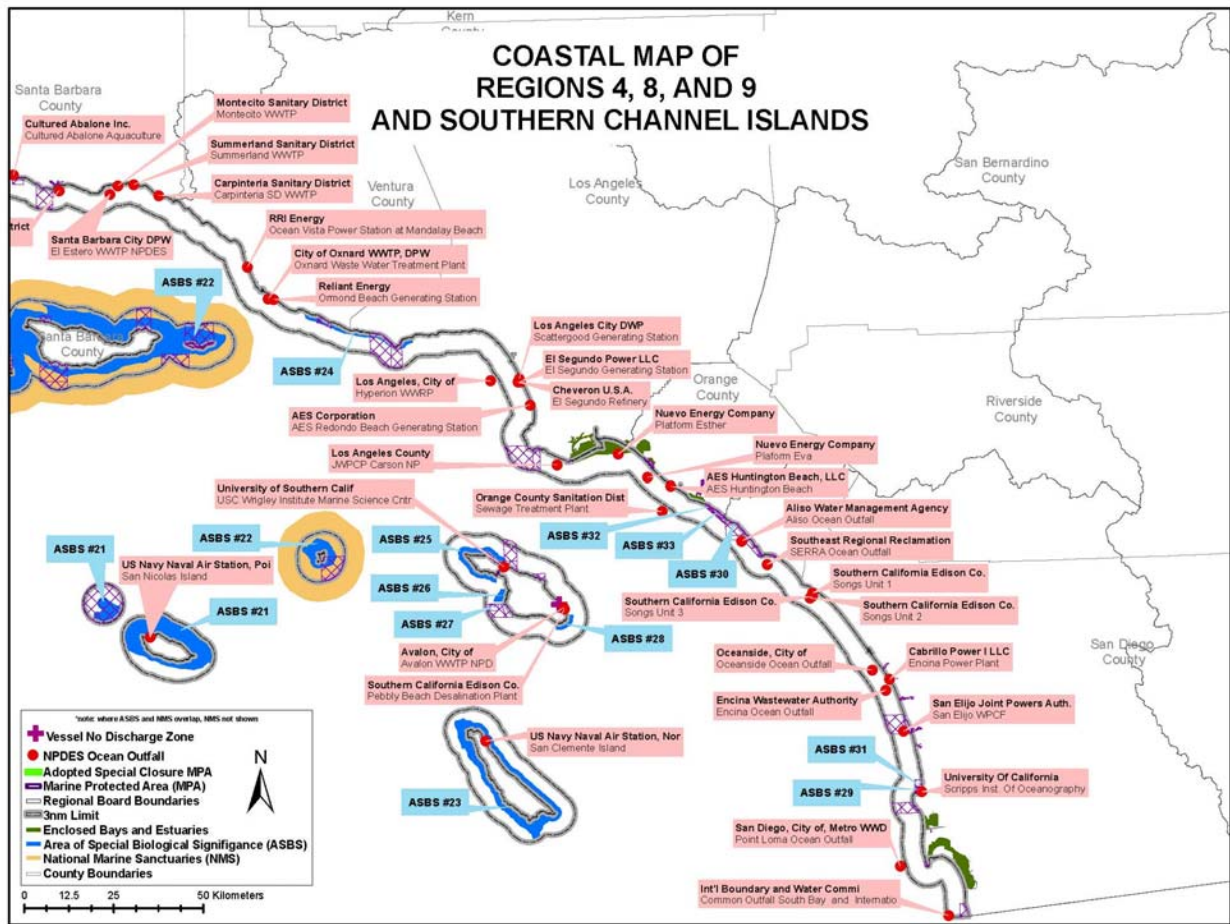


Figure 9. Coastal features of Southern Channel Islands and Regions 4, 8 and 9.

A total of eight islands make up the Channel Islands, and they are separated into two groups: the northern and southern Channel Islands. Anacapa, Santa Barbara, Santa Catalina, San Nicolas and San Clemente Islands all exist within the Los Angeles Regional boundaries. Anacapa and Santa Barbara Island are two of the islands that make up the Channel Islands National Park. Anacapa consists of three islets, almost five miles long and with a total land area of about one square mile (700 acres). The island includes towering sea cliffs, natural bridges, 130 sea caves, rich kelp forests and tidepools. Thousands of birds use Anacapa as a nesting area; all the islets of Anacapa host the largest breeding colony of western gulls in the world and the steep cliffs of West Anacapa are home to the largest breeding colony of California brown pelicans. California sea lions and harbor seals haul-out and breed on the shores of Anacapa. Santa Barbara Island is the smallest of the Channel Islands at one square mile (639 acres) but is an important seabird nesting site, with 11 nesting species. Thousands of western gulls nest every year on the island, as do brown pelicans, three species of cormorants, three species of storm-petrels, and one of the world's largest colonies of Xantus's murrelets. California sea lions, harbor seals and northern elephant seals rest and breed on the shores of Santa Barbara Island, and rich kelp forests surround the island. Santa Catalina Island is located just 22 miles (35 km) south-southwest of Los Angeles and encompasses approximately 47,884 acres. Santa

Catalina Island is the only Channel Island with a significant permanent civilian settlement, both in the city of Avalon and the unincorporated town of Two Harbors.^{xxix}

San Nicolas Island (SNI) and San Clemente Island (SCI) are both U.S. Navy Islands. SNI is located 60 miles south of Point Mugu. The 14,562 acre island is approximately 90 miles (145 km) long and 3 miles (5 km) wide, and has been owned by the Navy since 1933 as a weapons testing and training facility^{xxx}. The endangered black abalone and several species of pinnipeds utilize the shores and beaches of SNI. SCI, which is approximately 24 miles (39 km) in length and approximately 5 miles (8 km) at its widest point, is the southern-most of the eight California Channel Islands. It lies about 63 miles (101 km) south of Long Beach and 78 miles (126 km) west of San Diego. Since 1934, the island has been owned and operated by various naval commands. SCI and the waters surrounding the island are used and visited by a variety of organizations, including military, civilian government, contractors, environmentalists, civic organizations, fishing vessels, pleasure craft, and others.^{xxxi}

Five MPAs are located in Ventura county, and six MPAs are located in Los Angeles county. Eight ASBS are located in the Los Angeles Region: San Nicolas Island and Begg Rock (#21), Santa Barbara and Anacapa Islands (#22), San Clemente Island (#23), Laguna Point to Latigo Point (#24), Northwest Santa Catalina Island (#25), Western Santa Catalina Island (#26), Farnsworth Bank (#27), and Southeast Santa Catalina (#28).

Santa Ana (Region 8)

The Santa Ana Region (See Figures 9 and 10), comprises all basins draining into the Pacific Ocean between the southeasterly boundary of the Los Angeles region and a line which follows the drainage divide between Muddy and Moro Canyons from the ocean to the summit of San Joaquin Hills; thence along the divide between lands draining into Newport Bay and into Laguna Canyon to Niguel Road; thence along Niguel Road and Los Aliso Avenue to the divide between Newport Bay and Aliso Creek drainages; thence along that divide and the southeasterly boundary of the Santa Ana River drainage to the divide between Baldwin Lake and Mojave Desert drainages; thence along that divide to the divide between Pacific Ocean and Mojave Desert drainages.

The Santa Ana Region is the smallest of the nine Regions in the state (2,800 square miles) and is located in southern California, roughly between Los Angeles and San Diego. Although small geographically, the Region's four-plus million residents (1993 estimate) make it one of the most densely populated Regions. The climate of the Santa Ana Region is classified as Mediterranean: generally dry in the summer with mild, wet winters. The average annual rainfall in the Region is about fifteen inches, most of it occurring between November and March. The enclosed bays in the Region include Newport Bay, Bolsa Bay (including Bolsa Chica Marsh), and Anaheim Bay. Principal rivers include Santa Ana, San Jacinto and San Diego. Lakes and reservoirs include Big Bear Lake, Hemet Lake, Lake Mathews, Canyon Lake, Lake Elsinore, Santiago Reservoir, and Perris Reservoir.

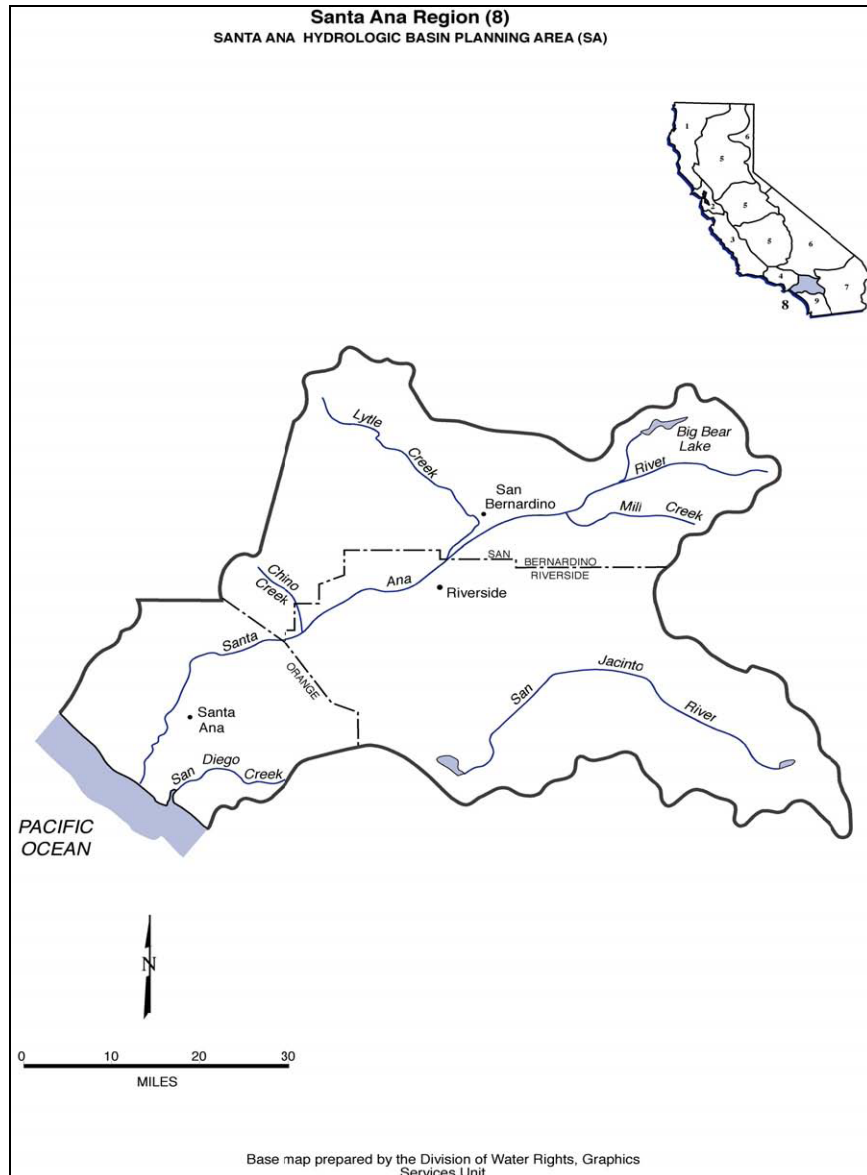


Figure 10. Hydrology of Region 8.

Eight MPAs are located in Orange County, two of which are estuarine. Orange County is located within both the Santa Ana and San Diego Regional boundaries. Two ASBS are located in the Santa Ana Region: Robert E. Badham (#32) and Irvine Coast (also located in the San Diego Region) (#33).

San Diego (Region 9)

The San Diego Region (see Figures 9 and 11) comprises all basins draining into the Pacific Ocean between the southern boundary of the Santa Ana Region and the California-Mexico boundary.

The San Diego Region is located along the coast of the Pacific Ocean from the Mexican border to north of Laguna Beach. The Region is rectangular in shape and extends approximately 80-miles along the coastline and 40 miles east to the crest of the mountains. The Region includes

portions of San Diego, Orange, and Riverside Counties. The population of the Region is heavily concentrated along the coastal strip. Two harbors, Mission Bay and San Diego Bay, support major recreational and commercial boat traffic. Coastal lagoons are found along the San Diego County coast at the mouths of creeks and rivers.

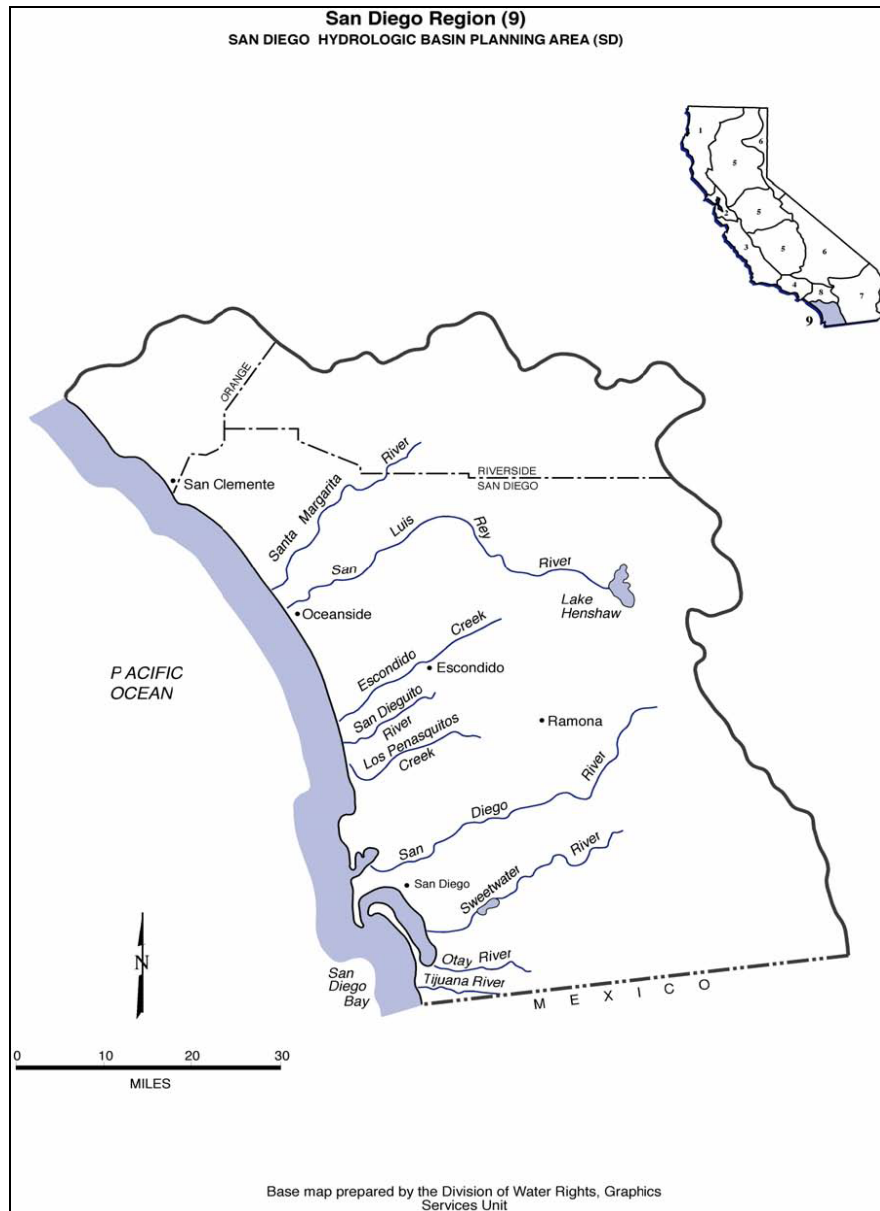


Figure 11. Hydrology of Region 9.

San Diego Bay is long and narrow, 15 miles in length and approximately one mile across. A deep-water harbor, San Diego Bay has experienced waste discharge from former sewage outfalls, industries, and urban runoff. Up to 9,000 vessels may be moored there. San Diego Bay also hosts four major U.S. Navy bases with approximately 80 surface ships and submarines. Coastal waters include bays, harbors, estuaries, beaches, and open ocean. Deep draft commercial harbors include San Diego Bay and Oceanside Harbor and shallower harbors include Mission Bay and Dana Point Harbor. Tijuana Estuary, Sweetwater Marsh, San Diego River Flood Control Channel, Kendal-Frost Wildlife Reserve, San Dieguito River Estuary, San

Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, San Luis Rey Estuary, and Santa Margarita River Estuary are the important estuaries of the Region.

Eight MPAs are located in Orange County, two of which are estuarine. Orange County is located within both the Santa Ana and San Diego Regional boundaries. Ten MPAs are located in San Diego County, four of which are estuarine. Four ASBS are located in the San Diego Region: Irvine Coast (also located in the Santa Ana Region) (#33), La Jolla (#29), Heisler Park (#29), and San Diego-Scripps (#31).

Managed, Threatened, and Endangered Species in California Ocean Waters

California's ocean waters and shore line are home to a wide variety of marine mammals, fish and birds. A variety of federal and state listed threatened and endangered species may be found in the ocean waters of California^{xxxii}, including the following;

White abalone - <i>Haliotis sorenseni</i>	California clapper rail <i>Rallus longirostris obsoletus</i>
Black abalone - <i>Haliotis cracherodii</i>	Light-footed clapper rail <i>Rallus longirostris levipes</i>
California black rail <i>Laterallus jamaicensis coturniculus</i>	Western snowy plover <i>Charadrius alexandrinus nivosus</i>
Chinook salmon- <i>Oncorhynchus tshawytscha</i>	Marbled murrelet <i>Brachyramphus marmoratus</i> ⁸⁰
Coho salmon- <i>Oncorhynchus kisutch</i>	California least tern <i>Sterna antillarum browni</i> ⁷⁹
Steelhead- <i>Oncorhynchus mykiss</i>	Southern sea otter <i>Enhydra lutris nereis</i>
Eulachon – <i>Thaleichthys pacificus</i>	Guadalupe fur seal <i>Arctocephalus townsendi</i>
Tidewater goby <i>Eucyclogobius newberryi</i>	Stellar sea lion <i>Eumetopias jubatus</i>
Green sea turtle <i>Chelonia mydas</i>	Sei whale - <i>Balaenoptera borealis</i>
Loggerhead sea turtle – <i>Caretta caretta</i>	Blue whale - <i>Balaenoptera musculus</i>
Olive Ridley sea turtle <i>Lepidochelys olivacea</i>	Fin whale - <i>Balaenoptera physalus</i>
Leatherback sea turtle <i>Dermochelys coriacea</i>	Humpback whale - <i>Megaptera novaeangliae</i>
Short-tailed albatross <i>Phoebastria albatrus</i>	Right whale <i>Eubalaena japonica</i> ¹⁰²
California condor <i>Gymnogyps californianus</i>	Sperm whale - <i>Physeter macrocephalus</i>
Green sturgeon – <i>Acipenser medirostris</i>	Killer whale - <i>Orcinus orca</i>

Source - California Department of Fish and Game, *State and Federally Listed Endangered and Threatened Animals of California*” Biogeographic Data Branch, California Natural Diversity Database, January 2011

In addition there are many specially protected and/or managed species of fish such as Garibaldi, Giant Seabass, Gulf and Broomtail Grouper, White Shark, Bronzespotted rockfish, Canary rockfish, Cowcod, Yelloweye rockfish and other species that cannot be taken either for recreational or commercial fishing purposes. To better protect and support the natural growth and propagation of marine fish in near shore waters, the California Fish and Game Commission has designated approximately 85 MPAs within ocean waters of California. These MPAs consist of marine reserves, marine conservation areas and special closures within the southern, central and north central coast of California. Currently, additional efforts are underway to establish MPAs for the north coast coastal waters and San Francisco Bay. Existing MPAs in each region are described above.

2.6.2 Environmental Baseline

There are approximately 71 NPDES wastewater discharges along the California coast. Of these discharges, approximately 35 discharge more than 10 million gallons per day (MGD) and 36 discharge less than 10 MGD. Significant discharges by flow are summarized below.

Table 1. Summary of significant wastewater discharges.

Region	No. of Discharges > 100 MGD	No. of Discharges > 10 and < 100 MGD	No. of Discharges < 10 MGD
North Coast			9
San Francisco		1	2
Central Coast	3	7	17
Los Angeles	7	1	6
Santa Ana	2		2
San Diego	3	5	1

MGD = million gallons per day

It should be noted that most of the wastewater discharges less than 10 MGD discharge within one nautical mile from shore, and many of those discharges are actually discharging on the shoreline.

Phase I MS4 (storm water) dischargers are medium and large cities or certain counties with populations of 100,000 or more. Phase II dischargers are small MS4s serving populations less than 100,000 persons and are typically located in urbanized areas. Generally, Phase I MS4s are covered by individual permits and Phase II MS4s are covered by a general permit. It is estimated that there are approximately 542 storm water ocean outfalls exceeding 36 inches, approximately 253 of which belong to Phase I MS4 permittees and approximately 198 of which belong to Phase II MS4 permittees. There are approximately one dozen (12) industrial storm water discharges to the ocean.

There are two known ocean-side golf courses in North Coast Region: Shelter Cove Golf Course in Whitehorn and Sea Ranch Golf Links in Sea Ranch Village. Approximately 44 miles of coastline in this region is used for agriculture. (Coastal agricultural land in California has been estimated by the State Water Board. A detailed summary of the estimates are described in Section 3.1 of this document.) Within the San Francisco Region, there are 5 known ocean-side golf courses: Golden Gate Park and Lincoln Park Municipal Golf Courses in San Francisco, Olympic Golf Club in Daly City, Sharp Park Golf Course in Pacifica, and Half Moon Bay Golf Links in Half Moon Bay. Approximately 17 miles of coastline in the San Francisco Region is used for agriculture. There are nine known ocean-side golf courses in the Central Coast Region: Cypress Point and Spy Glass Hill Golf Courses in Carmel, Le Sage Riviera/Pismo Beach State Golf Course in Pismo Beach; Spanish Bay Resort, Monterey Peninsula Dunes, and Pacific Grove Municipal Golf Courses in Pacific Grove; Pebble Beach Golf Course in Carmel; San Luis Bay Golf Club in Avila Beach; and Sandpiper Golf Course in Santa Barbara. Approximately 52 miles of coastline in the Central Coast Region is used for agriculture. Within the Los Angeles Region, golf courses located on or near the coast consist of the Palos Verdes Country Club, Los Verdes Golf Course, Terranea Resort, and Trump National Golf Club all located in the Rancho Palos Verdes area. Two of these are situated on the ocean: Trump National Golf Club Los Angeles and Terranea Resort. Approximately six miles of coastline in Los Angeles Region is used for agriculture. Pelican Hill Golf Club, located in Newport, is the

only ocean-side golf course in the Santa Ana Region. There are three ocean-side golf courses in the San Diego Region: Monarch Beach Golf Links in Dana Point, Torrey Pines Municipal Golf Course in Torrey Pines, and Sea N Air Golf Course on Coronado Island.

2.7 PROPOSED PROJECT

Water Code section 13170.2 requires that the Ocean Plan be reviewed at least every three years to ensure that the current standards are adequate and are not allowing degradation to indigenous marine species or posing a threat to human health. The State Water Board adopted the 2011 – 2013 Ocean Plan Triennial Review Workplan in March of 2011, which identifies Model Monitoring and Vessel Discharges as very high priority issues. This project, if approved by the State Water Board, will amend the 2009 Ocean Plan. The following amendments are proposed for adoption:

Issue 1 - Appendix III, Model Monitoring

In 2005, the State Water Board adopted [Resolution No. 2005-0080](#) directing staff to review a series of high priority issues identified in the 2005-2008 Triennial Review Workplan (TRW) (SWRCB 2005). One issue identified in the 2005 TRW was the need to improve statewide consistency for ocean monitoring requirements and reporting. These requirements are found in Appendix III.

Appendix III of the Ocean Plan includes standard monitoring procedures that provide direction to the Regional Water Quality Control Boards in developing monitoring programs to accompany discharge permits. These standard monitoring procedures reference analytical methods required for compliance with the bacterial, chemical, and toxicity requirements. Staff proposes to consider additional consistent monitoring elements to be included in Appendix III.

The proposed amendment to Appendix III will include question-driven monitoring and focus on assuring compliance with narrative and numeric water quality standards, the status and attainment of beneficial uses, and identifying sources of pollution. The model monitoring framework presented in Appendix III has three components that comprise a range of spatial and temporal scales: core monitoring, regional monitoring, and special studies. The framework is meant to be used as the basis for the design of an ocean discharger monitoring program by the Regional Water Boards.

Issue 2 – Vessel Waste Discharge Control

The current Ocean Plan, in regard to the control of commercial vessel waste discharge, is outdated. The 2009 Ocean Plan does not implement current water quality laws governing vessel waste discharges; there is inconsistency between the Ocean Plan and state and federal laws and regulations which poses difficulties for both dischargers and water quality regulators in interpretation, implementation, and compliance with these regulatory requirements.

The 2009 Ocean Plan is specifically not applicable to the regulation of vessel discharges. Section (C)(2) (“Applicability”) on page 1 of the Ocean Plan states, in part, that “this plan is not applicable to vessel wastes.” Staff is proposing to revise the Ocean Plan to be consistent with current applicable laws and regulations governing vessel waste discharges. Inconsistency between the Ocean Plan and other regulations, and state and federal laws pose difficulties for

both dischargers and water quality regulators in interpretation and implementation regulatory requirements. Staff also proposes to introduce language to the Ocean Plan to implement existing state law for cruise ships and other ocean going commercial vessels.

Issue 3 - Non-Substantive Administrative Changes

Maps of California's ocean features were added to the 2009 Ocean Plan. It was discovered after the adoption of the 2009 Ocean Plan that the Aliso Water Management Agency's ocean outfall was mapped at the incorrect coordinates. Also after the adoption of the 2009 Ocean Plan, DFG adopted new MPAs in the southern coast region. Staff proposes that a map reflecting the correct location of Aliso Water Management Agency ocean outfall and the new southern MPAs replace the existing map in the Ocean Plan (Figure VIII-5, 2009 Ocean Plan, SWRCB 2009).

After the re-formatting of the Ocean Plan in 2001, Tables A, B, C and D were no longer in alphabetical order. Staff proposes to change the names of the tables from A, B, C and D to 2, 1, 3 and 4 (respectively) to clear the confusion. Staff also proposes other non-substantive administrative changes to correct grammatical errors and to improve formatting.

The proposed non-substantive administrative changes to the 2009 Ocean Plan, listed as Issue 3 above, are strictly editorial or administrative in nature and will not have any regulatory effect. Because there is no possibility that the proposed edits may have a significant effect on the environment, these amendments are not subject to CEQA. (Cal. Code Regs., tit. 14, §15061(b)(3).) The State Water Board, therefore, is not required to prepare an environmental document for the amendments. Likewise, because the proposed amendments have no regulatory effect and are administrative in nature, the State Water Board is not required to consider economic impacts or obtain an independent scientific peer review of the changes.

3.0 ISSUES AND ALTERNATIVES

This section describes the significant issues and alternatives analyzed by the Water Board for the preparation of this document regarding the proposed amendments to the 2009 Ocean Plan.

Each issue description and analysis contains the following sections:

Issue: A brief description of the issue.

Background: A summary of the current Ocean Plan provisions related to the issue.

Issue Description: A detailed description of the issue, plus the historical development of the current Ocean Plan approach, and, if appropriate, a description of what led the State Water Board to establish the current provisions.

Comments Received: Comments received on the Draft SED will be identified and addressed in the Draft FSED.

Alternatives for State Water Board Action and Staff Recommendation: For each issue, staff has prepared at least two alternatives for State Water Board action and a suggestion is made for which alternative should be adopted by the State Water Board.

Proposed Ocean Plan Amendment: If appropriate, the wording of the proposed amendment is provided to indicate the exact change to the 2009 Ocean Plan.

Presented in Appendix A is the proposed Ocean Plan as the document would appear if all the proposed changes presented in this document are approved by the State Water Board and the U.S. EPA.

Presented in Appendices B and C are the environmental checklists for amendments proposed in Issues 1 and 2.

3.1 ISSUE 1: MODEL MONITORING

3.1.1 Issue

The proposed monitoring amendment addresses four high priority issues: Regional Ambient Water Quality Monitoring; Standard Monitoring and Reporting Requirements; Storm Water Discharges; and Non-point Source Discharges.

To address all of the issues, staff is proposing standard monitoring and reporting requirements for traditional point sources, storm water point sources and non-point sources using a model ocean discharge monitoring approach, including the incorporation of regional monitoring.

3.1.2 Background

In the 2005 amendments to the Ocean Plan, the reasonable potential Appendix VI procedure was modified to specifically incorporate the Appendix III monitoring requirements. Appendix III includes standard monitoring procedures that provide direction to the Regional Water Boards in developing monitoring programs to accompany discharge permits. These standard monitoring procedures reference analytical methods required for compliance with the bacterial, chemical, and toxicity requirements. Appendix III requires periodic monitoring of Table B pollutants at a monitoring frequency based on the discharger's flow rate.

Stakeholders requested staff to provide a rough draft, for discussion purposes, of a proposed amendment to Appendix III after a February 7, 2006 meeting about Model Ocean Discharge Monitoring. After staff made available to the public a draft amendment to Appendix III, public meetings were held to receive input from stakeholders. These meetings were held in 2006 on August 1 in Santa Rosa, August 8 in Los Angeles, and August 15 in Monterey. The public was asked to submit comments by September 1, 2006.

Public comments received in August 2006 to the staff proposal for amending the California Ocean Plan ocean discharge monitoring requirements can be found at: http://www.waterboards.ca.gov/water_issues/programs/ocean/oplans_comaug2006.shtml. Comments were received by: Chris Crompton with Orange County; Chris Zirkle with the City of San Diego; John Hunter with John L. Hunter and Associates, Inc.; Julie Hampel with the University of California, San Diego; Kirsten James et.al. with Heal the Bay and California Coastkeeper Alliance; Michael Shay with the City of Redondo Beach; Mo Lahsaiezadeh with the City of Oceanside, Clean Water Program; Neil Miller with the City of Manhattan Beach, Public Works; Richard Morgan with the City of Hermosa Beach; and Susan Damron with the City of Los Angeles City, Department of Water and Power.

On June 26, 2007, a public scoping meeting was held in San Francisco to seek input on proposed amendments to ocean discharge monitoring and radioactivity, as well as non-substantive changes to the Ocean Plan. The preliminary draft of the proposed monitoring procedures of Appendix III, from the 2007 Scoping Document, can be found at: http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oplans/scopemtg_june2007/prostdmonproc.pdf.

3.1.3 Issue Description

The Ocean Plan does not currently address regional monitoring or standard monitoring and reporting requirements for traditional point sources, storm water point sources and non-point source monitoring. Currently, significant differences exist among permit related monitoring efforts along the coast due to the differing quantity and quality among the discharges. The Southern California Bight (SCB), one of the most densely populated coastal regions in the country, encompasses four wastewater treatment plants discharging over 100 million gallons per day and approximately 15 smaller wastewater treatments discharging directly into the ocean. Over 20 million dollars are spent annually to monitor the influence of these discharges on the marine receiving waters. For the SCB, which encompasses portions of the Central Coast, Los Angeles Santa Ana and San Diego Regions, both major and minor wastewater permittees and MS4 (stormwater) permittees participate in a sophisticated collaborative regional programs in addition to individual permit-specific core monitoring efforts. Though similar regional monitoring programs are ongoing in other areas such as Monterey Bay, individual point sources are generally smaller and more isolated than those in the SCB, with little consistency between NPDES monitoring programs. The proposed amendments are intended to provide a consistent framework for planning and scaling NPDES receiving water monitoring for ocean waters of California based upon the quantity and quality of effluent. The proposed amendments would be considered for inclusion in Appendix III.

In preparing this proposed amendment staff reviewed and incorporated concepts from the model monitoring method developed by the Southern California Coastal Water Research Project (SCCWRP), in collaboration with the regulated community and regulatory agency staff. The SCCWRP model monitoring method is question driven, as is the proposed amendment. SCCWRP's model monitoring documents include an approach for large municipal wastewater dischargers, small municipal wastewater dischargers, and storm water dischargers.^{xxxiii xxxiv xxxv}

This approach treats all dischargers fairly; "low threat" facilities, or any facility in general, can be relieved of Appendix III monitoring after a reasonable potential analysis demonstrates that the discharge is not likely to cause an excursion of the specific water quality objective. A discharger assertion that the pollutant is "almost certainly not present" must be substantiated with monitoring data.

The three possible endpoints of a reasonable potential analysis have been integrated with the monitoring requirements of the Ocean Plan Appendix III. *Endpoint 1* will require an effluent limit and Appendix III monitoring. *Endpoint 2* will not require an effluent limit and Appendix III is not usually required. *Endpoint 3* is an inconclusive reasonable potential analysis and Appendix III monitoring will be required; existing limits will remain intact.

3.1.4 Alternatives for State Water Board Action and Staff Recommendation

1. No Action. Do not change the existing monitoring procedures;
2. A Model Monitoring Approach providing flexibility in implementing standard monitoring procedures, but without minimum requirements;
3. A Model Monitoring Approach providing flexibility in implementing standard monitoring procedures, with minimum requirements to provide consistent statewide ocean monitoring;
4. A prescriptive approach to all ocean discharges from all sources.

Alternative 1: No Action. Do not change the existing monitoring procedures. This alternative would keep the Ocean Plan as it currently exists, and it would perpetuate the lack of up-to-date guidance necessary for Regional Boards' and dischargers' implementation of the Ocean Plan. This option will result in very little or no consistent monitoring information necessary to manage storm water point source and non-point source discharges into the marine environment.

Alternative 2: Use a model ocean monitoring approach without minimum requirements. Standard Monitoring Procedures, Appendix III would be amended to include a model monitoring framework. The model monitoring framework is question driven and recognizes three components of model monitoring that comprise a range of spatial and temporal scales: (1) core monitoring, (2) regional monitoring, and (3) special studies. The new monitoring requirements would include the basic model monitoring framework. This approach would provide maximum flexibility when designing the monitoring for NPDES permits, Waste Discharge Requirements (WDRs) and Waivers of WDRs. However, a major draw back to this approach is that it would not set minimum requirements. This would very likely result in an undesirable lack of consistency between ocean discharger monitor programs in different regions.

Alternative 3: Use a model ocean monitoring approach with minimum requirements. Standard Monitoring Procedures, Appendix III of Ocean Plan would be reorganized using a model monitoring framework to provide flexibility and consistency. The model monitoring framework is question driven and recognizes three components of model monitoring that comprise a range of spatial and temporal scales: (1) core monitoring; (2) regional monitoring, and (3) special studies. The new monitoring requirements would include the basic model monitoring framework, and would provide guidance for applying this framework to traditional point sources, storm water point sources and non-point source agricultural and golf course discharges. Minimum monitoring requirements would be identified. This approach provides flexibility when designing the monitoring for NPDES permits, WDRs and Waivers of WDRs, and provides a consistent statewide ocean monitoring program.

Alternative 4: Use a prescriptive approach to all ocean discharges from all sources. This alternative would include specific elements for the design of monitoring programs including the frequency of monitoring, type of monitoring, and list of constituents for each source of discharges. This approach would require very comprehensive and consistent monitoring throughout the state but is not question-driven and would likely result in unnecessary monitoring. The overriding disadvantage to this approach is that flexibility would not be allowed in designing a monitoring program based on site-specific needs.

3.1.5 Staff Recommendation

Alternative 3: Amend Appendix III of the Ocean Plan to use a model ocean monitoring approach with minimum requirements identified.

3.1.6 Environmental Impact Analysis

Reasonable foreseeable action that may result if the proposed amendments are adopted would be the collection of additional monitoring data for those permittees that are found to have reasonable potential. The type of data collected for specific habitats could include the following:

Intertidal Rocky Substrate

- ◆ Water column, sediment and mussel tissue chemistry
- ◆ Biological Survey

Intertidal Sandy Substrate

- ◆ Water column, sediment and sand crab tissue chemistry
- ◆ Biological Survey

Subtidal Soft Bottom

- ◆ Water column, sediment and aquatic life tissue chemistry
- ◆ Water column and sediment toxicity
- ◆ Fish assemblage by trawl and invertebrate community composition from benthic grab

Subtidal Rocky Bottom

- ◆ Water column and aquatic life tissue chemistry
- ◆ Water column toxicity
- ◆ Fish Assemblage plant and invertebrate community composition through biological surveys

3.1.7 Reasonable Means of Compliance

Reasonable means of compliance may require permittees to perform the following activities:

- ◆ Conducting surveys and sampling of biota and surface water by biologists and technicians on foot.
- ◆ Conducting surveys and sampling of biota and surface water by snorkeling or scuba diving from shore or boat.
- ◆ Conducting surveys and sampling offshore from vessels large enough to support collecting sediment grabs, water quality data and trawl nets.
- ◆ Collecting data and information using remote or tethered submersible vehicles or autonomous gliders.

The following factors would not be affected by the activities described above if the proposed amendments are adopted:

- | | |
|---------------------------------------|-----------------------------|
| ◆ Agriculture and Forestry Resources, | ◆ Mineral Resources, |
| ◆ Cultural Resources, | ◆ Population/Housing |
| ◆ Geology/Soils, | ◆ Public Services |
| ◆ Hazards & Hazardous Materials, | ◆ Transportation/Traffic |
| ◆ Hydrology/Water Quality | ◆ Utilities/Service Systems |

Potentially affected factors are discussed below:

Aesthetics

Although the proposed amendments do not specify how each individual permittee must perform monitoring, adoption of the proposed amendments could potentially increase the type and frequency of monitoring in some intertidal, nearshore or shelf habitats. These activities described above would be of limited duration, from a few hours to a day at any single station or site. Small dive boats of 20 feet or less in length and passenger cars or pick-up trucks would be utilized for intertidal and nearshore surveys. Monitoring deeper waters 0.5 to 5 miles from shore would utilize larger vessels less than 100 feet in length which would sit on station for one to two hours. Trawling from these boats would follow a designated course and speed. None of these actions would result in tall or massive structures that could obstruct views from or of scenic vistas, nor would they substantially affect or degrade the existing visual character or quality of any site or its surroundings nor result in new lighting or installation of large structures that could generate reflected sunlight or glare. As a result of this analysis, no lasting or long term impacts to aesthetics will occur.

Air Quality/Greenhouse Gas Emissions

Within the project area, air quality standards are established by the California Air Resources Board (CARB) and the coastal air quality management districts consisting of the North Coast, Mendocino, Northern Sonoma, San Francisco Bay Area, Monterey Bay Unified, San Luis Obispo, Santa Barbara, Ventura, South Coast and San Diego. Adoption of the proposed amendments could result in additional monitoring utilizing vehicles and vessels powered by internal combustion engines. These emissions have the potential for temporary adverse effects to air quality. The primary pollutants of concern in these emissions are nitrogen oxides (NO_x), carbon monoxide, and particulate matter < 10 microns (PM₁₀). Estimating the number of additional vehicle and vessel trips required would be speculative, however staff do not expect the number of additional trips to be significant. Several mitigation measures are available to reduce potential impacts to ambient air quality from internal combustion engines. Mitigation measures could include, but are not limited to, the following: 1) use of vessels and vehicles with lower emission engines, 2) use of soot reduction traps or diesel particulate filters, 3) use of emulsified diesel fuel, 4) incorporating several field monitoring efforts into single trips for sites located in the same vicinity as one another, 6) performing proper maintenance of vehicles so they operate cleanly and efficiently, 7) replacing older diesel engines with engines certified by CARB. Through these measures, reasonably foreseeable short-term impacts could be mitigated to less than significant impacts. In 2006, California passed AB 32, the Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas emissions reduction goal into law. In December 2007, CARB approved the 2020 emission limit of 427 million metric tons of CO₂ equivalents (CO₂e) of greenhouse gases. The 2020 target of 427 million metric tons of CO₂e requires the reduction of 169 million metric tons of CO₂e, or approximately 30 percent, from the State's projected 2020 emissions of 596 million metric tons of CO₂e. Many of the measures suggested previously to reduce air emissions could reduce green house gas emissions as well. Through these measures, reasonably foreseeable short-term impacts could be mitigated to less than significant impacts

Biological Resources

The proposed amendments if adopted may require some permittees to collect fish and invertebrates to ensure that discharges are not having an effect on marine life. Benthic community assessments typically utilize a small 0.1 m² modified Van Veen grab or similarly sized grab sampler to collect benthic invertebrates in soft unconsolidated sediments to assess

benthic community condition, sediment toxicity and sediment chemistry. Bioaccumulation monitoring utilizes fish, mussel or sand crab tissue to assess the presence of contaminants in the marine food chain. Mussels and sand crabs are collected by hand from shore. Fish tissue may be collected using hook and line or by small otter trawl within offshore waters. Both methods are performed using techniques that minimize the risk of incidental take. Otter trawls for research purposes are typically smaller than those used in commercial fishing applications and towed across soft bottom substrates at 1-2 knots. These trawls avoid rocky areas to prevent fouling and damaging the trawl net. However limiting these trawls to soft bottom substrates also reduces the risk of collecting protected and managed species or degrading important habitat. In addition, at a relatively slow speed of 1 to 2 knots, most of the larger species including marine mammals and turtles are able to avoid capture. In addition, work windows can also be used to minimize disruption and ensure that field or vessel activities do not coincide with nesting, nursery or migration routes.

In California waters, all field collecting or take of biological resources for scientific research purposes is regulated by the California Department of Fish and Game (DFG), under Fish and Game Code section 1002 and California Code of Regulations title 14 sections 650 and 670.7. Each supervising field biologist would be required to obtain a Scientific Collecting Permit that includes the location, species and number of organisms proposed for collection accompanied by plans and procedures proposed for collection and prevention of incidental take of non-target and threatened and endangered species. Collecting in MPAs and National Sanctuaries requires additional authorizations from the MPA Regional Manager or the National Oceanic and Atmospheric Administration (NOAA) National Sanctuary Director. Prior to each collection, the permittee must also notify all parties at least 24 hours before field work begins so that agencies can notify the appropriate DFG warden or NOAA Law Enforcement. Therefore, no significant impacts to biological resources will result from the proposed amendments.

Land Use and Planning

The proposed amendments will not affect land uses or land use planning. As described above, the DFG has designated MPAs and is in the process of designating additional MPAs. While it is unlikely that the designation of MPAs will affect existing discharges, there may be some opportunity for collaboration with MPA monitoring efforts. Where discharges are occurring in or near MPAs, the extent of monitoring required pursuant to the amendment could potentially be reduced if permit and MPA monitoring were planned jointly. Collaborative monitoring programs have proven successful. The proposed amendments support regional monitoring programs which, if jointly shared among permittees and MPAs, could reduce the number of monitoring efforts and costs if planned effectively.

Noise

The proposed amendments will not significantly raise noise levels above background in areas where monitoring is being performed as a result of these amendments. All vessels and vehicles will comply with local noise ordinances and would be performed during regular daylight hours. These periodic events would occur infrequently and only last for a few hours of a full day. Trawls would be performed in deeper water offshore.

Recreation

Monitoring would be unlikely to effect recreational activities such as fishing, swimming or recreational boating. Trawling Vessels will not anchor or remain at a single station for long periods of time. Monitoring events would occur infrequently and only last for up to a few hours of a full day.

If the State Water Board adopts the recommended alternative, there will be no significant adverse environmental impacts. The purpose of the Ocean Plan is to protect the quality of California's coastal waters for the use of the people of the State. Since no significant adverse effects are expected, mitigation measures are not warranted.

3.1.8 Peer Review

The amendment is to provide monitoring guidance to dischargers. The proposed changes do not involve adding or altering objectives to the Ocean Plan nor do they constitute standards and therefore do not require peer review.

3.1.9 Compliance with Sections 13241 and 13242 of the Water Code

As described in Section 2.2.3, Water Code section 13241 requires assessment of economic considerations and other factors when adopting water quality objectives. The State Water Board is not proposing the adoption of water quality objectives; therefore, Water Code section 13241 does not apply to these proposed amendments to the California Ocean Plan.

Water Code section 13242 requires that the program of implementation include a description of surveillance to determine compliance with the objectives. The proposed amendment would vastly improve the surveillance as a result of a question driven approach to monitoring related directly to the standards.

3.1.10 Economic Information

State and federal law do not require an economic assessment for the model monitoring amendment (Issue 1) proposed in this document. However, due to the concern dischargers have expressed regarding potential cost increases associated with the proposed amendment, this document includes an economic information summary.

In a 2001 report published by SCCWRP, it was estimated that about \$24 million is spent annually on monitoring by southern California NPDES dischargers, primarily on effluent, bacteria, and sediment monitoring, and approximately \$17.1 million is spent on monitoring by POTWs.^{xxxvi}

The proposed monitoring requirements would vary among discharger types. It should be noted that the constituents to be monitored are in existing Tables B and A of the 2009 Ocean Plan. Numeric chemical and toxicity objectives are in Table B of the 2009 Ocean Plan. Table A of the 2009 Ocean Plan provides technology based effluent limitations. It is being proposed that the titles of Tables B and A of the 2009 Ocean be changed to Tables 1 and 2, respectively, as part of the non-substantive amendments described later in this report (Issue 3, Section 3.3). However, the terminology in the current 2009 Ocean Plan, namely Tables A and B, will be used in the following discussion.

Point Sources

Point Sources would be defined as industrial, municipal, marine laboratory and other traditional point sources of pollution that discharge wastewater directly to surface waters and are required to obtain NPDES permits. NPDES wastewater discharges would be placed into categories of greater or less than 10 million gallons per day (MGD) and between greater or less than one (1) nautical mile (nm) of shore. There are approximately 29 NPDES wastewater discharges with

flows exceeding 10 MGD, and 37 wastewater point sources with flows less than 10 MGD. Of the wastewater point sources with flows less than 10 MGD, six are marine laboratories located in ASBS and are subject to ASBS monitoring requirements associated with recent exceptions to the Ocean Plan. Therefore, the proposed monitoring requirements will affect approximately 31 existing wastewater discharges with flows less than 10 MGD. There are approximately 48 wastewater discharges within one nm of shore affected by the proposed monitoring requirement.

The proposed amendment sets volume and location driven categories for wastewater point source discharges. The proposed amendment also allows the substitution of regional monitoring for certain individual monitoring requirements. In 2007, the State Water Board conducted a review of monitoring and reporting programs in NPDES wastewater permits. It was concluded that approximately 66 percent of the NPDES wastewater discharges exceeding flows of 10 MGD and approximately 12 percent of the wastewater discharges with flows less than 10 MGD were already participating in a regional monitoring effort.

Monitoring of chemical constituents (Tables A and B) and acute and chronic aquatic life toxicity (Table B) would be required of all NPDES wastewater dischargers exceeding flows of 10 MGD twice per year and all NPDES wastewater dischargers with flows less than 10 MGD once per year. A Toxicity Reduction Evaluation (TRE)/Toxicity Identification Evaluation (TIE) is already required under existing section III.C.10. of the Ocean Plan if there is consistent exceedance of Table B limit for toxicity. All NPDES wastewater dischargers within one nm of shore or one nm of a commercial shellfish bed, or exceeding flows of 10 MGD would be required to monitor indicator bacteria five times per month. All NPDES wastewater dischargers within one nm of shore, a State Water Quality Protection Area (SWQPA), a State Marine Reserve, a State Park, or a State Conservation Area and/or exceeding flows of 10 MGD would be required to conduct benthic community monitoring and bioaccumulation once per permit cycle, though all of those requirements could also be satisfied through participation in a regional monitoring program. All NPDES wastewater dischargers with flows exceeding 10 MGD would be required to conduct annual sediment monitoring and seasonal water column monitoring, though both requirements could also be satisfied through participation in a regional monitoring program.

Storm Water Point Sources

Storm Water Point Sources would be defined as those NPDES permitted discharges regulated by Construction or Industrial Storm Water General Permits or Phase I or Phase II municipal separate storm sewer system (MS4s) Permits. Phase I dischargers are medium and large cities or certain counties with populations of 100,000 or more. Phase II dischargers are small MS4s serving populations less than 100,000 persons and are typically located in urbanized areas. Generally, Phase I MS4s are covered by individual permits and Phase II MS4s are covered by a general permit.^{xxxvii}

All MS4 and industrial storm water dischargers with outfalls exceeding 36 inches in diameter would be required to conduct indicator bacteria monitoring at a minimum of three times per year, and up to 34 times per year if located at an AB 411 beach or if there is any flow present during dry weather. An AB 411 Beach is defined as a beach visited by more than 50,000 people annually and located on an area adjacent to a storm drain that flows in the summer. (Cal. Health & Saf. Code. § 115880.) All MS4 and industrial storm water dischargers would be required to monitor for aquatic life toxicity at a minimum of 10 percent of all outfalls exceeding 36 inches in diameter (and a TRE/TIE if there is consistent exceedance of Table B limit for toxicity, which is already required under existing section III.C.10. of the Ocean Plan) once per

year. Aquatic life toxicity monitoring requirements could also be met through participation in a regional monitoring effort.

All Phase I MS4 dischargers would be required, once per permit cycle, to conduct bioaccumulation and sediment monitoring, and these may be met individually or through participation in a regional monitoring program. Bioaccumulation monitoring consists of field, in situ sampling. Phase I MS4 dischargers would also be required to monitor receiving water characteristics at 10 percent of the MS4 discharges, and this may also be met individually or through participation in a regional monitoring program.

All Phase I and II MS4 dischargers would be required to conduct monitoring of runoff chemical constituents at 10 percent of all outfalls exceeding 36 inches in diameter once per year. Industrial storm water dischargers would be required to conduct monitoring of runoff chemical constituents at all outfalls twice per year. A portion of the chemical monitoring requirements (Table B metals, Polycyclic Aromatic Hydrocarbons (PAHs), and pesticides) would be satisfied through participation in a regional monitoring effort for runoff and/or receiving water monitoring.

There are approximately eight Phase I MS4 permittees and approximately 30 Phase II MS4 permittees with storm water discharges to the ocean. The exact number of municipal storm drains along the coast exceeding 36 inches in diameter is not known. Therefore, the State Water Board is estimating the number of drains by using information provided by Santa Monica Baykeeper for Santa Monica Bay, and extrapolating state wide along the coast. The data is several years old and therefore may not be entirely accurate, but the data is the best available representing an urban coastline. Based on the information provided there are approximately 83 outfalls exceeding 36 inches within the 80.5 mile stretch of Santa Monica Bay, which equates to approximately one outfall (exceeding 36 inches) per 0.7 miles of shoreline. The State Water Board performed a geographic information system (GIS) analysis to estimate that Phase I permittees account for approximately 362 miles of coast, and Phase II permittees account for approximately 283 miles of coast. This results in a total of 645 coastal miles of municipal storm water coverage in California. The information above was used in the following calculation to estimate the number of ocean outfalls exceeding 36 inches: $(\text{coastal miles}) \times (1 \text{ outfall} / 0.7 \text{ miles} = 0.7) = \text{estimated number of outfalls} > 36"$. This results in an estimate of approximately 452 outfalls exceeding 36 inches along California's coast, 253 Phase I outfalls exceeding 36 inches, and approximately 198 Phase II outfalls exceeding 36 inches.

Based on a review of industrial storm water permits, there are also approximately one dozen industrial storm water discharges to the ocean statewide.

Non-point Sources

A Non-point Source is defined as any source of pollutants that is not a Point Source as described above. Non-point sources include but are not limited to: agriculture and grazing, forestry/timber harvest, urban not covered under an NPDES permit, marinas and mooring fields, and golf courses not covered under an NPDES Permit. This amendment would involve agriculture and golf courses discharges.

The proposed amendment would require indicator bacteria monitoring of representative agricultural irrigation tail water and storm water runoff discharges at a minimum of twice per year and up to 33 times per year if the discharge is located at an AB 411 beach or if there is any flow during dry weather.

Chemical constituent monitoring would be conducted at a minimum of twice per year in each watershed through a statistically representative sample of agriculture and golf course discharges. Core or regional aquatic life toxicity monitoring of agricultural and golf course discharges would be required once annually. Receiving water monitoring of representative agricultural and golf course discharges would be required at a minimum of twice per year, though regional monitoring would provide an alternative means to fulfill the requirement.

The State Water Board estimated the number of golf course and agricultural discharges that would be affected by the proposed amendment. Satellite images were reviewed and golf courses were counted to determine that California has an approximate total of 22 golf courses located on the coast. Satellite images and land use data were assessed using GIS software to estimate that there are approximately 109 miles of California's coast used for agriculture and/or grazing. Nineteen representative shoreline segments having agriculture and grazing land use were selected as a sample area. The sample area totaled 14 miles of coast. Within the 14 mile sample area, 75 agricultural drainages were counted. The following calculation was used to estimate the number of coastal agricultural drainages to ocean waters: $[(total\ miles\ of\ coastal\ agriculture) / (total\ miles\ of\ sample\ area)] \times (\#\ of\ drains\ in\ sample\ area) = total\ estimated\ number\ of\ agricultural\ drains$. Based on the data and using this calculation, it is estimated that there are approximately 584 agricultural drains along the California coast.

3.1.11 Cost Estimates

Bacteria Monitoring

There are approximately 66 NPDES wastewater dischargers, and currently, about 85 percent of the NPDES wastewater dischargers with flows exceeding 10 MGD and about 12 percent of the wastewater dischargers with flows less than 10 MGD conduct bacteria monitoring. Based on available data, it is estimated that a bacteria monitoring test would cost about \$90. The proposed amendment would require approximately four additional NPDES wastewater dischargers exceeding 10 MGD to sample for bacteria five times per month, which would cost about \$5,400 annually per discharger. Approximately 30 wastewater dischargers with flows less than 10 MGD and within 1 nm of shore would require bacteria monitoring five times per month, also costing about \$5,400 annually per discharger. Monitoring at all storm water point source discharges (approximately 464 discharges) would be required, at minimum, three times per storm season, which would cost approximately \$270 annually per discharge. Monitoring at all non-point source discharges (approximately 606 discharges) would be required, at minimum, twice per year, costing approximately \$180 annually per discharger. The frequency of monitoring by storm water point sources and non-point sources is a minimum. Storm water and non-point source dischargers would be required to conduct additional sampling up to 31 times per year if a dry weather flow is present or if the discharge is located at an AB 411 beach. This would add an additional \$2,790 to the annual cost per discharge. All dischargers have the option of participating in a regional monitoring program instead of conducting sampling independently, which would reduce the cost of monitoring.

Water Chemistry Monitoring

Based on available data, it is estimated that a water chemistry analysis would cost about \$1,000 per test (costs for chemical analysis will vary depending on specific pesticides required.) Currently, about 95 percent of the NPDES wastewater dischargers exceeding flows of 10 MGD and approximately 40 percent of the wastewater dischargers with flows less than 10 MGD conduct effluent chemistry monitoring, and these permittees would likely not incur additional costs. The proposed amendment would require approximately one additional NPDES

wastewater discharger with a flow exceeding 10 MGD, and twelve industrial storm water dischargers to conduct chemistry monitoring at minimum twice per year. This would cost approximately \$2,000 annually per discharger per year, except that industrial storm water dischargers may meet part of this monitoring requirement through participation in regional monitoring. A complete scan of Table A and B constituents would be required, at minimum, once per year of approximately 15 additional wastewater dischargers with flows under 10 MGD. A complete scan of Table A and B constituents would be required, at minimum, once per year at 10 percent of Phase I and II MS4 discharges (approximately 45 discharges), which would cost approximately \$1,000 annually per discharge, though some of the monitoring (Table B metals, PAHs and pesticides) could be conducted through a regional monitoring program instead. Chemistry monitoring for non-point sources would be conducted collectively according to watershed or through regional monitoring, therefore monitoring costs would vary.

Sediment Monitoring

Sediment monitoring costs about \$560 per sample. Approximately 66 percent of the NPDES wastewater dischargers with flows exceeding 10 MGD conduct sediment monitoring. Annual sampling would be required of approximately 10 additional NPDES wastewater dischargers with flows exceeding 10 MGD, unless the Regional Water Board reduces the frequency, or allows the discharger to participate in a regional monitoring program instead. Sediment monitoring would be required once per permit cycle for all Phase I MS4 permittees (approximately eight permittees), but storm water dischargers would be allowed to participate in a regional monitoring program to satisfy sediment monitoring requirements.

Aquatic Life Toxicity

Currently, about 75 percent of the NPDES wastewater dischargers exceeding 10 MGD conduct aquatic life toxicity monitoring, while none of the dischargers with flows under 10 MGD conduct aquatic life toxicity monitoring. Based on available data, it is estimated that aquatic life toxicity monitoring would cost about \$465 per test. The proposed amendment would require approximately seven additional NPDES wastewater discharges with flows exceeding 10 MGD to monitor semiannually, totaling a cost of approximately \$930 annually per discharger. The proposed amendment would require all 27 wastewater dischargers with flows less than 10 MGD and 10 percent of the MS4 and industrial storm water discharges (approximately 46 drains exceeding 36 inches) to conduct aquatic life toxicity monitoring annually, totaling about \$465 annually per discharger. Approximately 606 non-point source discharges would be required to monitor once annually, or participate in a regional monitoring program.

A toxicity reduction evaluation (TRE) may be required if a discharge consistently exceeds limitations. The price of a TRE is variable. Phase I and II MS4 dischargers as well as non-point source dischargers would have the option, at the Regional Water Board's discretion, to participate in a regional monitoring program rather than conduct annual core monitoring.

Benthic Community Monitoring

Currently, about 70 percent of the NPDES dischargers exceeding 10 MGD conduct benthic monitoring. The proposed amendment would require approximately nine additional NPDES wastewater dischargers with flows exceeding 10 MGD and 30 wastewater dischargers with flows less than 10 MGD and within one nm of shore to perform annual benthic community monitoring. Benthic community monitoring is estimated to cost approximately \$2,795 per year, per discharger. Dischargers have the option, at the Regional Water Board's discretion, to participate in a regional monitoring program instead of conducting individual core benthic community monitoring.

Bioaccumulation

The proposed amendment would require all (approximately all 29) NPDES wastewater dischargers with flows exceeding 10 MGD and all 30 wastewater dischargers with flows less than 10 MGD and within one nm of shore to perform bioaccumulation monitoring once per permit cycle. The proposed amendment would require bioaccumulation monitoring of all 253 Phase I MS4 discharges once per permit cycle. Monitoring costs vary from approximately \$10,000 for two invertebrate species and between \$3,000 and \$25,000 for multiple fish species, per sampling and analysis; therefore, monitoring would cost between \$3,000 and \$25,000 per permit cycle per discharger. Alternatively, the Regional Board may allow dischargers to fulfill this requirement through a regional monitoring program.

Receiving Water Characteristics

All 29 NPDES dischargers exceeding 10 MGD would be required to measure seasonally (four times per year) turbidity, color/chlorophyll, dissolved oxygen (DO), pH, and salinity (at facilities discharging brine), which would cost each discharger between approximately \$1,380 and \$5,000 annually (between approximately \$345 and \$1,250 per sampling and analysis). At 10 percent of the Phase I MS4 discharges (at approximately 25 drains) and at a representative number of agricultural and golf course discharges, dischargers will be required to measure turbidity, color/chlorophyll, DO, pH, nitrate, phosphate, and ammonia once annually. It will cost Phase I MS4 and non-point source dischargers between approximately \$445 and \$1,350 per sampling and analysis. These dischargers are allowed to fulfill this requirement by participating in a regional monitoring program, at the Regional Water Board's discretion.

Estimated Total Monitoring Cost Increase

To summarize, there will be little or no cost increases for many NPDES wastewater permittees, especially major dischargers, since much of the proposed monitoring is already being performed under their permits. There will be a cost increase for many smaller wastewater dischargers. There will also be an increase in monitoring costs for storm water and non-point source dischargers, many of which currently do little or no monitoring for ocean discharges.

The following table (next page) presents estimates of total costs statewide (all dischargers combined) above current monitoring efforts based on the proposed amendment for a permit cycle (a five year period). Total cost estimates range between \$5,900,255 and \$28,328,780. It is important to note that the following table does not include cost savings associated with regional monitoring. Also not included in the cost estimates below are the cost of water chemistry monitoring for non-point source discharges, the possible cost of a TRE/TIE for toxicity exceedances, or the cost of receiving water monitoring for non-point source discharges.

Table 2. Summary of estimated costs per permit cycle (a five year period) associated with new monitoring requirements outlined in the proposed amendment (Issue 1).

	Wastewater Point Source	Storm Water Point Source	Non-Point Source	TOTAL ADDITIONAL
Bacteria	\$918,000	\$626,400	\$545,400	\$2,089,800
Bacteria, if dry flow or at AB411	N/A	Up to \$6,472,800	Up to \$8,453,700	\$14,926,500
Water Chemistry	\$85,000	\$345,000	Varies	\$430,000
Sediment	\$28,000	\$4,480	N/A	\$32,480
Aquatic Life Toxicity	\$95,325*	\$106,950*	\$1,408,950*	\$1,611,225*
Benthic	\$545,025	N/A	N/A	\$545,025
Bioaccumulation	\$177,000 to \$1,475,000	\$759,000 to \$6,325,000	N/A	\$936,000 to \$7,800,000
Receiving Water Characteristics	\$200,100 to \$725,000	\$55,625 to \$168,750	Varies	\$255,725 to \$893,750
TOTAL ADDITIONAL	\$2,048,450 to \$3,871,350	\$1,897,455 to \$14,049,380	\$1,954,350** to \$10,408,050**	\$5,900,255 to \$28,328,780

* Does not include the cost of a possible TRE/TIE due to exceedance of toxicity objective.

** Does not include the costs of water chemistry and receiving water monitoring of non-point sources, which are too variable to estimate.

3.1.12 Proposed Ocean Plan Amendment

1. INTRODUCTION

The purpose of this appendix is to provide guidance to the Regional Water Boards on the ~~implementation of~~ implementing the Ocean Plan and to ensure the reporting of useful information. Monitoring should be question driven rather than just gathering data and should be focused on assuring compliance with narrative and numeric water quality standards, the status and attainment of beneficial uses, and identifying sources of pollution.

It is not feasible to ~~cover~~ prescribe requirements in the Ocean Plan which encompass all circumstances and conditions that could be encountered by all dischargers, nor is it desirable to limit the flexibility of the Regional Water Boards in the monitoring of ocean waters. This appendix should therefore be considered the ~~basic component of any~~ basic framework for the design of an ocean discharger monitoring program. The Regional Water Boards are responsible for issuing monitoring and reporting programs (MRPs) that will implement this monitoring guidance. Regional Water Boards can deviate from the procedures required in the appendix only with the approval of the State Water Resources Control Board ~~unless the Ocean Plan allows for the selection of alternative protocols by the Regional Boards.~~

This monitoring guidance utilizes a model monitoring framework. The model monitoring framework has three components that comprise a range of spatial and temporal scales; (1) core monitoring, (2) regional monitoring, and (3) special studies.

1) Core monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent limits and/or impacts to receiving water quality. Core monitoring is typically conducted in the immediate vicinity of the discharge by examining local scale spatial effects.

2) Regional monitoring provides information necessary to make assessments over large areas and serves to evaluate cumulative effects of all anthropogenic inputs. Regional monitoring data also assists in the interpretation of core monitoring studies. It is recommended that the Regional Water Boards require participation by the discharger in an approved regional monitoring program, if available, for the receiving water. In the event that a regional monitoring effort takes place during a permit cycle in which the MRP does not specifically address regional monitoring, a Regional Water Board may allow relief from aspects of core monitoring components in order to encourage participation.

3) Special studies are directed monitoring efforts designed in response to specific management or research questions identified through either core or regional monitoring programs. Often they are used to help understand core or regional monitoring results, where a specific environmental process is not well understood, or to address unique issues of local importance. Regional Water Boards may require special studies as appropriate. Special studies are not addressed further in this guidance because they are beyond its scope.

The Ocean Plan does not address all site-specific monitoring issues and allows the Regional Water Boards to select alternative protocols with the approval of the State Water Board. If no direction is given in this appendix for a specific provision of the Ocean Plan, it is within the discretion of the Regional Water Boards to establish the monitoring requirements for that provision.

2. QUALITY ASSURANCE

All monitoring conducted in compliance with MRPs must be comparable with the Quality Assurance requirements of the Surface Water Ambient Monitoring Program (SWAMP).

SWAMP comparable means that measurement quality objectives (MQOs) for the project must be equivalent to or better than SWAMP MQOs. Dischargers must use the SWAMP Quality Assurance Management Plan (QAMP) as a guideline for their project's requirements. The SWAMP QAMP is located at: www.waterboards.ca.gov/swamp/qamp.html. Refer to the EPA guidance document (EPA QA/G-4) for selecting data quality objectives, located at www.epa.gov/quality/qs-docs/qs-final.pdf.

Data must be formatted to match the database requirements of the SWAMP.

3. TYPE OF WASTE DISCHARGE SOURCES

Discharges to ocean waters are highly diverse and variable, exhibiting a wide range of constituents, effluent quality and quantity, location and frequency of discharge. Different types of discharges will require different approaches. This Appendix provides specific direction for three broad types of discharges: (1) Point Sources, (2) Storm Water Point Sources and (3) Non-point Sources.

3.1. Point Sources

Industrial, municipal, marine laboratory and other traditional point sources of pollution that discharge wastewater directly to surface waters and are required to obtain NPDES permits.

3.2. Storm Water Point Sources

Storm Water Point Sources, hereafter referred to as Storm Water Sources, are those NPDES permitted discharges regulated by Construction or Industrial Storm Water General Permits or municipal separate storm sewer system (MS4s) Permits. MS4 Permits are further divided into Phase I and II Permits. A Phase I MS4 Permit is issued by a Regional Water Board for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. A Phase II MS4 General Permit is issued by the State Water Resources Control Board for the discharge of storm water for smaller municipalities, and includes nontraditional Small MS4s, which are governmental facilities such as military bases, public campuses, prison and hospital complexes.

3.3. Non-point Sources

A Non-point Source is any source of pollutants that is not a Point Source described in Section 3.1 or Storm Water Source as described in Section 3.2. Land use categories contributing to non point sources include but are not limited to:

- a. Agriculture
- b. Grazing
- c. Forestry/timber harvest
- d. Urban not covered under an NPDES permit
- e. Marinas and mooring fields
- f. Golf Courses not covered under an NPDES Permit

Only agricultural and golf course related non-point source discharge monitoring is addressed in this Appendix, but Regional Water Boards may issue MRPs for other non-point sources at their discretion. Agriculture includes irrigated lands. Irrigated lands are where water is applied for the purpose of producing crops, including, but not limited to, row and field crop, orchards, vineyard, rice production, nurseries, irrigated pastures, and managed wetlands.

4. INDICATOR BACTERIA

4.1. Point Sources

Primary questions to be addressed:

1. Does the effluent comply with the water quality standards in the receiving water?
2. Does the sewage effluent reach water contact zones or commercial shellfish beds?

To answer these questions, core monitoring shall be conducted in receiving water for the indicator bacteria at a minimum five times per month for any point sources discharging treated sewage effluent:

- a. within one nautical mile of shore, or
- b. within one nautical mile of a commercial shellfish bed, or

c. if the discharge is in excess of 10 million gallons per day (MGD).

4.2. Storm Water

Primary questions to be addressed:

1. Does the receiving water comply with water quality standards?
2. Is the condition of the receiving water protective of contact recreation and shellfish harvesting beneficial uses?
3. What is the extent and magnitude of current or potential receiving water indicator bacteria problems from storm water runoff?
4. Are the indicator bacteria levels in receiving water getting better or worse?
5. What are the sources of indicator bacteria in runoff?
6. What is the relative runoff contribution to the receiving water indicator bacteria waste load?

To answer these questions, core monitoring for indicator bacteria shall be required periodically on storm water discharges representative of the area of concern. At a minimum, for municipal storm water discharges, all receiving water at outfalls greater than 36 inches in diameter or width must be monitored (ankle depth, point zero) at the following frequencies:

- a. During wet weather with a minimum of three storms per year, and
- b. When flowing during dry weather, and if located at an AB 411 beach, at least five times per month. (An AB 411 Beach is defined as a beach visited by more than 50,000 people annually and located on an area adjacent to a storm drain that flows in the summer. (Health & Saf. Code § 115880..))

Alternatively, regional monitoring may be performed to assess the status of marine contact recreation water quality. If the permittee participates in a regional monitoring program, core monitoring may be suspended for that period at the discretion of the Regional Water Board.

4.3. Non-point Sources

Primary questions to be addressed:

1. Does the receiving water comply with water quality standards?
2. Do agricultural and golf course non-point source discharges reach water contact or shellfish harvesting zones?
3. What is the extent and magnitude of current or potential receiving water indicator bacteria problems from agricultural and golf course non point sources?
4. Are the indicator bacteria levels in receiving water getting better or worse?
5. What are the sources of indicator bacteria?
6. What is the relative agricultural and golf course non-point sources contribution to the receiving water indicator bacteria waste load?

To answer these questions, core monitoring of representative agricultural irrigation tail water and storm water runoff, at a minimum, will be conducted in receiving water (ankle depth, point zero) for indicator bacteria:

- a. During wet weather, at a minimum of two storm events per year, and
- b. When flowing during dry weather, and if located at an AB 411 beach or within one nautical mile of shellfish bed, at least five times per month.

Alternatively, regional monitoring may be performed to assess the status of marine contact recreation water quality. If the discharger participates in a regional monitoring program, core monitoring may be suspended for that period at the discretion of the Regional Water Board.

5. CHEMICAL CONSTITUENTS

5.1. Point Sources

Primary questions addressed:

1. Does the effluent meet permit effluent limits thereby ensuring that water quality standards are achieved in the receiving water?
2. What is the mass of the constituents that are discharged annually?
3. Is the effluent concentration or mass changing overtime?
4. What is the fate of the discharge plume?

Consistent with Appendix VI, the core monitoring for the substances in Table 1 (and Table 2) shall be required periodically. For discharges less than 10 MGD, the monitoring frequency shall be at least one complete scan of the Table 1 substances annually. Discharges greater than 10 MGD shall be required to monitor at least semiannually.

5.2. Storm Water

Primary questions addressed:

1. Does the receiving water meet the water quality standards?
2. Are the conditions in receiving water getting better or worse?
3. What is the extent and magnitude of current or potential receiving water problems from storm water runoff?
4. What is the relative runoff contribution to pollutant loading in the receiving water?
5. What are the sources of the runoff problem?

For Phase I and Phase II MS4 dischargers, core runoff monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width once per year. Monitoring shall be for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, Table 1 metals, PAHs, and pesticides determined by the Regional Water Boards.

For industrial storm water discharges, all outfalls must be monitored during two storm events per year. Effluent monitoring shall be conducted for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, and Table 1 metals and PAHs.

The requirements for individual monitoring for Table 1 metals, PAHs and pesticides may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional program for monitoring runoff and receiving water.

5.3. Non-point Sources

The primary questions are:

1. Does the agricultural or golf course runoff meet water quality standards in the receiving water?
2. Are nutrients present that would contribute objectionable aquatic algal blooms or degrade indigenous biota?
3. Are the conditions in receiving water getting better or worse?
4. What is the relative agricultural runoff or golf course contribution to pollutant loading in the receiving water?
5. What are the sources of the agricultural runoff?

To answer these questions, a statistically representative sample (determined by the Regional Water Board) of agricultural irrigation tail water and storm water runoff, and golf course runoff in each watershed will be monitored for Ocean Plan Table 1 metals, ammonia as N, nitrate as N, phosphate as P, and pesticides determined by the Regional Board:

- a. During wet weather, at a minimum of two storm events per year, and
- b. During dry weather, when flowing, at a frequency determined by the Regional Boards.

This requirement may be satisfied by core monitoring individually, or through participation in a regional program for monitoring runoff and receiving water at the discretion of the Regional Water Board.

6. SEDIMENT MONITORING

All Sources:

1. Is the dissolved sulfide concentration of waters in sediments significantly increased above that present under natural conditions?
2. Is the concentration of substances set forth in Table 1, for protection of marine aquatic life, in marine sediments at levels, which would degrade the benthic community?
3. Is the concentration of organic pollutants in marine sediments at levels that would degrade the benthic community?

6.1. Point Sources

For discharges greater than 10 MGD, acid volatile sulfides, OP Pesticides, Table 1 metals, ammonia N, PAHs, and chlorinated hydrocarbons will be measured in sediments annually in a core monitoring program approved by the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board. If sufficient data exists from previous water column monitoring for these parameters the Regional Water Board at its discretion may reduce the frequency of monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program.

6.2. Storm Water

For Phase I MS4 permittees, acid volatile sulfides, OP Pesticides, Ocean Plan Table 1 metals, ammonia N, PAHs, and chlorinated hydrocarbons will be measured in sediments once per permit cycle.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board.

7. AQUATIC LIFE TOXICITY

Toxicity tests are another method used to assess risk to aquatic life. These tests assess the overall toxicity of the effluent, including the toxicity of unmeasured constituents and/or synergistic effects of multiple constituents.

7.1. Point Sources

1. Does the effluent meet permit effluent limits for toxicity thereby ensuring that water quality standards are achieved in the receiving water?
2. If not:
 - a. Are unmeasured pollutants causing risk to aquatic life?
 - b. Are pollutants in combinations causing risk to aquatic life?

Core monitoring for Table 1 receiving water toxicity shall be required periodically. For discharges less than 10 MGD, the monitoring frequency for acute and chronic toxicity of the effluent should be at least annually. For discharges greater than 10 MGD, the monitoring frequency for acute and chronic toxicity of the effluent should be at least semiannually. If an exceedance is detected, six additional toxicity tests are required within a 12-week period. If an additional exceedance is detected within the 12-week period, a toxicity reduction evaluation (TRE) is required, consistent with Section III.C.10. which requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1.

Core monitoring for acute sediment toxicity will utilize alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*)

7.2. Storm Water

1. Does the runoff meet toxicity standards in the receiving water?
2. Does storm water runoff cause or contribute to aquatic toxicity?
3. What is the relative runoff contribution to the receiving water toxicity?
4. What are the causes of the toxicity and the sources of the constituents responsible?
5. Are the conditions in the receiving water getting better or worse?

For Phase I MS4, Phase II MS4, and industrial storm water discharges core toxicity monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width at a minimum once per year. Receiving Water monitoring shall be for Table 1 acute and chronic toxicity. Sediment monitoring for acute sediment toxicity will utilize alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*). If an exceedance is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected at that time, a TRE is required, consistent with Section III.C.10. which requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core toxicity monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program.

7.3. Non-point Sources

1. Does the agricultural and golf course runoff meet water quality standards in the receiving water?
2. Are the conditions in receiving water getting better or worse?
3. What is the relative agricultural and golf course runoff contribution to pollutants loading in the receiving water?
4. What are the causes of the toxicity, and the sources of the constituents responsible?
5. What is the relative runoff contribution to the receiving water toxicity?

Core receiving water monitoring shall include Table 1 acute and chronic toxicity. Core sediment monitoring shall include acute sediment toxicity utilizing alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*) at a minimum once per year. If an exceedance is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected, a TRE is required, consistent with Section III.C.10. which requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program.

8. BENTHIC COMMUNITY HEALTH

8.1. Point Sources

1. Are benthic communities degraded as a result of the discharge?

To answer this question, benthic community monitoring shall be conducted, at a minimum, once per permit cycle:

- a. for all discharges greater than 10 MGD, or
- b. those discharges one nautical mile or less from shore, or
- c. discharges one nautical mile or less from a State Water Quality Protection Area or a State Marine Reserve, Park or Conservation Area.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Board.

9. BIOACCUMULATION

9.1. Point Sources

1. Does the concentration of pollutants in fish, shellfish*, or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade marine communities?

To answer these questions, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle for:

- a. discharges greater than 10 MGD, or
- b. those discharges one nautical mile or less from shore, or
- c. discharges one nautical mile or less from a State Water Quality Protection Area or a State Marine Reserve, Park or Conservation Area.

Constituents to be monitored must include pesticides (at the discretion of the Regional Board), Table 1 metals, and PAHs. Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Resident mussels are preferred over transplanted mussels. Sand crabs and/or fish may be added or substituted for mussels at the discretion of the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

9.2. Storm Water

1. Does the concentration of pollutants in fish, shellfish*, or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade marine communities?

For Phase I MS4 dischargers, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle. Constituents to be monitored must include OP Pesticides, Ocean Plan Table 1 metals, PAHs, chlorinated hydrocarbons, and pyrethroids. Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Sand Crabs, fish, and/or Solid Phase Microextraction may be added or substituted for mussels at the discretion at the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

10. RECEIVING WATER CHARACTERISTICS

All Sources:

1. Is natural light significantly reduced at any point outside the zone of initial dilution as the result of the discharge of waste?
2. Does the discharge of waste cause a discoloration of the ocean surface?
3. Does the discharge of oxygen demanding waste cause the dissolved oxygen concentration to be depressed at any time more than 10 percent from that which occurs naturally?
4. Does the discharge of waste cause the pH to change at any time more than 0.2 units from that which occurs naturally?
5. Does the discharge of waste cause the salinity to change at any time more than 10 percent from that which occurs naturally?
6. Do nutrients cause objectionable aquatic growth or degrade indigenous biota?

10.1. Point Sources

For discharges greater than 10 MGD, turbidity (alternatively light transmissivity or surface water transparency), color [Chlorophyll-A and/or color dissolved organic matter (CDOM)], dissolved oxygen and pH shall be measured, at a minimum seasonally, in a core monitoring program approved by the Regional Water Board. If sufficient data exists from previous water column monitoring for these parameters, the Regional Water Board, at its discretion, may reduce the frequency of water column monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program.

Salinity must also be monitored by all point sources discharging desalination brine as part of their core monitoring program.

10.2. Storm Water

At a minimum of 10% of Phase I MS4 discharges, receiving water turbidity, color, dissolved oxygen, pH, nitrate, phosphate, and ammonia shall be measured annually in a core monitoring program approved by the Regional Water Board. The Regional Water Board at its discretion may allow this requirement to be satisfied through participation in a regional monitoring program.

10.3. Non-point Sources

Representative agricultural and golf course discharges shall be measured, at a minimum twice annually (during two storm season and irrigation season) for receiving water turbidity, color, dissolved oxygen, pH, nitrate, phosphate, ammonia in a core monitoring program approved by the Regional Water Board. The Regional Water Board, at its discretion, may allow this requirement to be satisfied through participation in a regional monitoring program.

11. ANALYTICAL REQUIREMENTS

Procedures, calibration techniques, and instrument/reagent specifications shall conform to the requirements of 40 CFR PART 136. Compliance monitoring shall be determined using an US EPA approved protocol as provided in 40 CFR PART 136. All methods shall be specified in the monitoring requirement section of waste discharge requirements.

Where methods are not available in 40 CFR PART 136, the Regional Water Boards shall specify suitable analytical methods in waste discharge requirements. Acceptance of data should be predicated on demonstrated laboratory performance.

Laboratories analyzing monitoring data shall be certified by the California Department of Public Health, in accordance with the provisions of Water Code section 13176, and must include quality assurance quality control data with their reports.

Sample dilutions for all bacterial analyses shall range from 2 to 16,000. Each test method number or name (e.g., EPA 600/4-85/076, Test Methods for *Escherichia coli* and *Enterococci* in Water by Membrane Filter Procedure) used for each analysis shall be specified and reported with the results.

Test methods used for coliforms (total and fecal) shall be those presented in Table 1A of 40 CFR PART 136, unless alternate methods have been approved in advance by U.S. EPA pursuant to 40 CFR PART 136.

Test methods used for enterococcus shall be those presented in EPA publication EPA 600/4-85/076, Test Methods for *Escherichia coli* and *Enterococci* in Water by Membrane Filter Procedure or any improved method determined by the Regional Board to be appropriate. The Regional Water Board may allow analysis for *Escherichia coli* (*E. coli*) by approved test methods to be substituted for fecal coliforms if sufficient information exists to support comparability with approved methods and substitute the existing methods.

The State or Regional Water Board may, subject to EPA approval, specify test methods which are more sensitive than those specified in 40 CFR PART 136. Because storm water and non-point sources are not assigned a dilution factor, sufficient sampling and analysis shall be required to determine compliance with Table B Water Quality Objectives. Total chlorine residual is likely to be a method detection limit effluent limitation in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 µg/L.

Acute toxicity monitoring requirements in permits prepared by the Regional Water Boards shall use marine test species instead of freshwater species when measuring compliance. The Regional Water Board shall require the use of critical life stage toxicity tests specified in this Appendix to measure TUC. A minimum of three test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period, monitoring can be reduced to the most sensitive species. Dilution and control water should be obtained from an unaffected area of the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Use of critical life stage bioassay testing shall be included in waste discharge requirements as a monitoring requirement for all discharges greater than 100 MGD by January 1, 1991 at the latest. For other major dischargers, critical life stage bioassay testing shall be included as a monitoring requirement one year before the waste discharge requirement is scheduled for renewal. Procedures and methods used to determine compliance with benthic monitoring shall conform to the requirements of the following federal guidelines when applicable: Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters (1990) -- EPA/600/4-90/030 (PB91-171363). This manual describes guidelines and standardized procedures for the use of macroinvertebrates in evaluating the biological integrity of surface waters.

Procedures used to determine compliance with bioaccumulation monitoring shall conform to the requirements of U.S. EPA. 1995. Methods for Sampling and Analyzing Contaminants in Fish and Shellfish Tissue, U.S. EPA document # 823R-95-007, National distribution of chemical concentrations in mussels and oysters in the USA Marine Environmental Research 53:117-143, and/or State Mussel Watch Program, 1987-1993 Data Report. State Water Resources Control Board 94-1WQ.

3.2 ISSUE 2: VESSEL WASTE DISCHARGE CONTROL

3.2.1 Issue

The current Ocean Plan is outdated with reference to discharges of wastes from commercial vessels. The 2009 Ocean Plan does not implement current water quality laws governing vessel waste discharges and there is inconsistency between the Ocean Plan and state and federal laws and regulations. This inconsistency poses difficulties for both dischargers and water quality regulators in interpretation, implementation, and compliance with these regulatory requirements.

3.2.2 Background

Vessel discharges, including the discharge of non-indigenous species through ballast water, and from fouling communities on vessel hulls, threaten the economy, environment and human health. Ballast water from ships is the single largest source of aquatic invasive species (AIS). AIS are associated with increasing damage to coastal habitats and public infrastructure. Ballast water may also contain a host of other pollutants that impact receiving waters, including biological pollutants such as pathogenic bacteria and viruses, as well as chemical pollutants. The Clean Water Act assigns U.S. EPA both the legal authority and the legal obligation to regulate the discharge of all pollutants, including but not limited to AIS, in vessels' ballast water.

In addition, there are several state laws that require the regulation of vessel discharges, including the Porter-Cologne Water Quality Control Act. In 2006, the State Water Board approved a Clean Water Act Section 303(d) list that included listings of "exotic species" as a regulated pollutant under the Clean Water Act, and some of these listings attributed their presence to discharges of ballast water from ships (e.g., in the Sacramento-San Joaquin Delta).

There are a variety of other waste streams associated with large commercial vessels that are subject to the CWA. Common pollutants from vessels include gray water (and gray water contaminated by sewage), leachate from antifouling hull coatings (e.g., copper-based hull coatings), and leachate from sacrificial zinc anodes designed to prevent corrosion. Other pollutants may also be potentially discharged, including trash and garbage (including plastic debris), oily bilge water, hazardous wastes, medical waste, photographic film-processing waste, and dry-cleaning wastes. Threats to water quality due to discharges from vessels may potentially affect areas of special biological significance, marine protected areas, marine sanctuaries, existing and proposed desalination drinking water intakes in marine waters, contact recreation beaches and extensive coastal areas which attract large numbers of recreational boaters in both northern and southern California.

In response to concerns associated with the discharges from vessels and the threat posed by the introduction of non-indigenous invasive species to California's natural resources, two state laws were adopted: the Marine Invasive Species Act (MIS Act) and the California Clean Coast Act of 2005. This issue proposes to add references to these laws and to delete the statement in Section (C) (2) ("Applicability") on page 1 of the Ocean Plan that states, in part, that "this plan is not applicable to vessel wastes." The Marine Invasive Species Act and the California Clean Coast Act of 2005 are summarized below.

3.2.2.1 Vessel Discharges Under California's Laws and Regulations

The Marine Invasive Species Act

The MIS Act (Pub. Resources Code, § 71200 et. seq.) generally applies to all vessels carrying or capable of carrying ballast water into the coastal waters of the State after operating outside of the coastal waters of the State and to all ballast water and associated sediments taken on a vessel. The MIS Act imposes specified requirements on responsible parties operating vessels in the waters of the State in order to minimize the uptake and release of non-indigenous species. The MIS Act requires the California State Lands Commission to adopt regulations that require an owner or operator of a vessel carrying, or capable of carrying, ballast water which operates in the waters of the state to implement certain interim and final performance standards for the treatment of ballast water to prevent release of non-indigenous species. The MIS Act (as amended in 2007 by Assembly Bill 740, Laird) also requires responsible parties to remove hull-fouling organisms from hulls, piping, propellers, sea chests, and other submerged portions of vessels operating in the waters of the state.

The California Clean Coast Act of 2005

The California Clean Coast Act of 2005 (CCC Act) (SB 771, Simitian), which became effective January 1, 2006, amended Chapter 588 of the Public Resources Code (Pub. Resources Code § 72400 et. seq.) and expanded the scope of the required sewage discharge prohibition application to U.S. EPA by the State Water Board (under CWA 312 (f)(3)) from large passenger vessels to a variety of "oceangoing ships." The CCC Act defines an "oceangoing ship" as a private, commercial or government vessel of 300 gross registered tons or more calling on California ports or places. The CCC Act requires the State Water Board to seek permission from U.S. EPA to regulate sewage discharges from large passenger vessels (i.e. commercial vessels of 300 gross registered tons or greater carrying passengers for hire) and other oceangoing ships (300 gross tons or more) in order to protect marine water quality if the State Water Board determines that it is necessary to do so. Accordingly the State Water Board has applied to the U.S. EPA for a No Discharge Zone that will apply to vessel sewage in all State marine waters, and the U.S. EPA is currently considering that application.

The CCC Act also prohibits both classes of vessels from discharging hazardous wastes, oily bilge water, medical wastes, photographic film-processing wastes, and dry-cleaning wastes within three nautical miles from shore. (Pub. Resources Code §§ 72410 and 72420.2.). Oily bilge water may include used lubrication oils, oil sludge and slops, fuel and oil sludge, used oil, used fuel and fuel filters, and oily waste.

The CCC Act prohibits large passenger vessels from discharging graywater into California's marine waters. "Graywater" includes drainage from dishwashers, galleys, showers, laundries, baths, lavatory washbasin drains, and drinking fountains. Oceangoing vessels (other than cruise ships) are prohibited from discharging untreated graywater if the vessel has "insufficient holding capacity." However, oceangoing ships that are also subject to the *Federal Vessel General Permit*, effective December 19, 2008, which is the general NPDES permit adopted by U.S. EPA (see below) must follow a detailed protocol to ensure compliance with required best management practices prior to discharging treated or untreated graywater regardless of holding capacity as specified in Section 2.2.15 of this federal NPDES permit.^{xxxviii}

The CCC Act applies the California Department of Toxic Substances Control's (DTSC's) definition of hazardous waste by referencing section 25117 of the California Health and Safety

Code. Medical, photographic, dry-cleaning, and hazardous waste streams not otherwise specified under the CCC generally constitutes a type of hazardous waste, which have been subject to regulation under either the federal Resource Conservation and Recovery Act (RCRA) or the California Health and Safety Code hazardous waste laws starting in 1976. Neither RCRA nor the California Health and Safety Code hazardous waste laws exempted vessel discharges of hazardous waste nor permitted the discharge of untreated hazardous waste to surface waters without issuance of a permit from DTSC.

Because these prohibitions were already in effect, the CCC Act caused no additional cost for compliance with DTSC's hazardous waste laws and regulations relating to the proper storage, transport, treatment and/or disposal of these hazardous wastes. The CCC Act only reiterated existing law in RCRA and the hazardous waste statutes contained in California Health and Safety Code, with regard to its definitions of hazardous waste and prohibitions on the disposal of untreated hazardous wastes.

3.2.2.2 Vessel Discharges Regulated by Federal Laws, Regulations, and International Treaties

General Requirements

Discharges from vessels must comply with section 311 (33 U.S.C. 1321) of the CWA, the Act to Prevent Pollution from Ships (APPS) (33 USC Section 190-1915), the National Marine Sanctuaries Act, (16 U.S.C. 1431 et seq.) and implementing regulations found at 15 CFR Part 922 and 50 CFR Part 404, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA, 7 U.S.C. section 136 et seq.), and the Oil Pollution Control Act (OPA '90, 33 U.S.C., Section 2701-2720).

All vessels must comply with any applicable regulations promulgated by the Secretary of the Department of the Coast Guard that establish specifications for safe handling, carriage, and storage of pollutants, as specified in 40 CFR 122.44(p).

All discharges of oil, including oily mixtures, from vessels subject to Annex I of the International Convention for the Prevention of Pollution from Ships (as implemented by the Act to Prevent Pollution from Ships) and U.S. Coast Guard regulations found in 33 CFR 151.09 must have concentrations of oil less than 15 parts per million as measured by U.S. EPA Method 1664 or other appropriate method for determination of oil content as accepted by the International Maritime Organization (IMO) or U.S. Coast Guard before discharge. All vessels subject to MARPOL must have a current International Oil Pollution prevention Certificate (IOPP) issued in accordance with 33 CFR 151.19 or 151.21. All other discharges of oil including oily mixtures must not contain oil in quantities that may be harmful pursuant to 40 CFR Part 110.

U.S. EPA Vessel General Permit (As Amended November, 2010)

On March 30, 2005, the U.S. District Court for the Northern District of California (in Northwest Environmental Advocates et al. v. EPA) ruled that the U.S. EPA regulation excluding "discharges incidental to the normal operation of a vessel" from NPDES permitting exceeded the Agency's authority under the CWA. On September 18, 2006, the Court issued an order revoking this regulation (40 C.F.R. 122.3(a)) as of September 30, 2008. EPA appealed the District Court's decision, and on July 23, 2008, the Ninth Circuit upheld the decision, leaving the September 30, 2008 vacatur date in effect.

In response to this Court order, EPA developed two proposed permits to regulate discharges from vessels. The district court subsequently extended the date of vacatur to December 19, 2008. On June 17, 2008 the U.S. EPA issued a draft NPDES General Permit for Discharges Incidental to the Normal Operation of all Commercial Vessels and Large Recreational Vessels (79 feet or longer). The Vessel General Permit (VGP) regulates the discharge of certain specific vessel waste streams by establishing effluent limitations including Best Management Practices (BMPs). On June 27, 2008, the State Water Board received a letter from the U.S. EPA requesting the issuance of a water quality certification pursuant to Clean Water Act (CWA) Section 401 for the VGP. U.S. EPA granted the State Water Board an extension until January 1, 2009 for issuing CWA 401 certification for the VGP in California. On December 18, 2008 the State Water Board issued the CWA 401 certification for the VGP, with conditions, based on the June 17, 2008 U.S. EPA draft VGP. On December 29, 2008 the U.S. EPA issued the final VGP.

At present, the following classes of vessels are subject to various provisions of the VGP:

- (1) Non-recreational auxiliary vessels such as lifeboats, rescue boats, and barges greater than 79 feet in length
- (2) All commercial fishing vessels and other non-recreational vessels otherwise excluded from regulation under the VGP are subject to this permit if they possess ballast tanks
- (3) Other commercial vessels, including cruise ships, ferries, and oil tankers

“Discharges incidental to the normal operation” (of a vessel) do not include sewage discharges from vessels. Sewage discharges from vessels are regulated by section 312 of the CWA. U.S. EPA excludes mixtures of graywater and sewage from the VGP, but also specifies (VGP, § 2.2.25) that requirements for graywater discharges in § 2.2.15 of the VGP and sewage discharges under CWA Section 312 apply equally to this mixed waste stream.

Marine Sanitation Devices

Federal regulations for Marine Sanitation Devices (MSDs) jointly administered by U.S. EPA and the U.S. Coast Guard (USCG) are set forth in 33 CFR Part 159, and these include performance standards for each of the three types of MSDs. These regulations also specify the type(s) of MSDs each vessel class may possess.

No Discharge Zones

Vessels are prohibited from discharging sewage, treated or untreated, into federal No Discharge Zones (NDZs). The U.S. EPA may NDZs for vessel sewage under section 312 of the CWA. Currently California has 10 NDZs, and pursuant to Public Resources Code section 72440, the State Water Board has recently requested that U.S. EPA establish an NDZ in all of California’s marine waters for sewage from large passenger vessels and oceangoing ships greater than 300 gross tons up to 3 nautical miles offshore.

International Maritime Organization

The International Maritime Organization (IMO), which is an organizational affiliate of the United Nations, is responsible for overseeing implementation of various international treaties such as the International Convention for the Prevention of Pollution from Ships (MARPOL). The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes: Annex I

Regulations for the Prevention of Pollution by Oil, Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk, Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form, Annex IV Prevention of Pollution by Sewage from Ships, Annex V Prevention of Pollution by Garbage from Ships, and Annex VI Prevention of Air Pollution from Ships. The United States is signatory to all of the Annexes except Annex IV (sewage).

3.2.3 Issue Description

The 2009 Ocean Plan is specifically not applicable to the regulation of vessel discharges. Section (C) (2) (“Applicability”) on page 1 of the Ocean Plan states, in part, that “this plan is not applicable to vessel wastes.” The State Water Board is proposing in this issue to revise the Ocean Plan to be consistent with current applicable laws and regulations governing vessel waste discharges. Inconsistency between the Ocean Plan and other regulations, and state and federal laws pose difficulties for both dischargers and water quality regulators in interpretation and implementation regulatory requirements. Staff also proposes to introduce language to the Ocean Plan to implement existing state law for cruise ships and other oceangoing commercial vessels.

3.2.4 Alternatives for State Water Board Action and Staff Recommendation

1. No action. Do not amend the Ocean Plan and maintain the existing language. The Ocean Plan will be inconsistent with the federal Clean Water Act and the recent changes to the California Public Resources Code;
2. Amend the Ocean Plan to reflect federal and state law now in effect with respect to controlling pollution from cruise ship and commercial oceangoing vessels vessel discharges;
3. Amend the Ocean Plan to prohibit all discharges from all vessels, regardless of size or type of waste, including sewage.

Alternative 1: No Action. As noted above, the current Ocean Plan is outdated. The current situation provides few discernable advantages for the regulated community, regulatory agencies, or the protection of water quality in California. If the Ocean Plan is not amended, its requirements will not implement current water quality laws governing vessel waste discharges. Inconsistency between the Ocean Plan and state and federal laws and regulations will pose difficulties for both dischargers and water quality regulators in interpretation, implementation, and compliance with these regulatory requirements.

Alternative 2: Amend the Ocean Plan to reflect Federal and State law now in effect. This alternative would amend the Ocean Plan to reflect laws, regulations and permit conditions, including definitions, now in effect with respect to controlling pollution from cruise ship and commercial ocean-going vessel discharges. The advantage of following this course of action would be to implement current laws governing vessel waste discharges. Removal of inconsistencies between the Ocean Plan and state and federal laws and regulations will aid both dischargers and water quality regulators in interpretation, implementation, and compliance with these pre-existing regulatory requirements, and thus ensure that the Ocean Plan’s provisions facilitate discharger compliance. Ultimately, this alternative would better protect beneficial uses and support compliance with the water quality objectives in the Ocean Plan.

Alternative 3: Prohibit all vessel discharges regardless of vessel size and waste type, including sewage.

At present, there are legal constraints which preclude the adoption of a prohibition for all vessel discharges from all classes of vessels. These legal constraints include:

(1) Section 312 precludes states from adopting or enforcing any statute or regulation of the state or a political subdivision with respect to the design, manufacture, installation, or use of MSDs (except on houseboats).

(2) On July 29, 2008, Senate Bill S. 2766 was signed into law (P.L. No. 110-288).^{xxxix} This law provides that recreational vessels shall not be subject to the requirement to obtain an NPDES permit to authorize discharge incidental to their normal operation. It instead directs EPA to evaluate recreational vessel discharges, develop management practices for appropriate discharges, and promulgate performance standards for those management practices. It then directs the USCG to promulgate regulations for the use of the management practices developed by EPA and requires recreational boater compliance with such practices

(3) On July 30, 2010, President Obama signed P.L.111-215 (Senate Bill S. 3372) into law. This law amends P.L. 110-299 (Senate Bill S. 3298), which generally imposes a moratorium during which time neither EPA nor states may require NPDES permits for discharges incidental to the normal operation of commercial fishing vessels and other non-recreational vessels less than 79 feet. As a result of P.L. 110-299, the VGP does not cover vessels less than 79 feet or commercial fishing vessels, unless they have ballast water discharges. P.L. 111-215 extended the expiration date of the moratorium from July 31, 2010 to December 18, 2013.

(4) The California Clean Coast Act of 2005 (Pub. Resources code § 72400 et seq.) imposes discharge prohibitions on large passenger vessels and oceangoing ships for several waste streams, but does not include vessels under 300 gross registered tons. As a consequence, the Act does not apply to most recreational vessels or other smaller vessels such as rescue boats, life boats, and some commercial fishing vessels.

In addition, this alternative would be difficult for the regulated community to fully comply with in the near future due to either excessive costs, the absence of replacement vessels designed to prevent the discharge of the various waste streams described above, a lack of suitable retrofitting modifications, or some combination of the above. For example, few recreational vessels now registered by the Department of Boating and Waterways appear to have onboard graywater holding tanks with sufficient capacity to prevent discharges into receiving waters. There are currently over 900,000 registered recreational vessels in California, so retrofitting/replacement of all such vessels by the adoption of such requirements in revisions to the Ocean Plan would be very costly, or potentially cost-prohibitive in the near-term for many recreational boaters. This alternative would require an analysis of costs and environmental impacts, consultation with other agencies, and preparation of a substitute environmental document. Furthermore it would be inconsistent with the State's approach to work with U.S. EPA on an NDZ for sewage from vessels of 300 gross tons or more.

3.2.5 Staff Recommendation

Alternative (2): Amend the Ocean Plan to apply to vessel wastes, and to implement existing state law for cruise ships and other ocean going commercial vessels.

3.2.6 Environmental Impact Analyses

These amendments will not adversely impact the environment. These provisions are all currently in Public Resources Code, Clean Water Act, and in the US EPA Vessel General Permit. The addition of these requirements in the Ocean Plan does not change existing law and thus introduces no new obligations for which analysis of reasonably foreseeable methods of compliance is required. The deletion of the exemption for applicability of vessel wastes, and incorporation of existing legal requirements for vessels, will aid both dischargers and water quality regulators in interpretation, implementation, and compliance with these current requirements. This would better protect beneficial uses and support compliance with the water quality objectives in the Ocean Plan, resulting in an environmental benefit.

3.2.7 Scientific Peer Review

The amendment is to align the Ocean Plan with laws already in place. The proposed changes do not involve adding or altering objectives to the Ocean Plan nor do they constitute new standards and therefore do not require peer review.

3.2.8 Compliance with Sections 13241 and 13242 of the Water Code

As described in Section 2.2.3, Water Code section 13241 requires assessment of specific factors when adopting water quality objectives. The State Water Board is not proposing the adoption of water quality objectives; therefore, Water Code section 13241 does not apply to these proposed amendments to the California Ocean Plan.

Water Code section 13242 requires that the program of implementation include a description of the nature of the actions which are necessary to achieve the objectives, including recommendations of appropriate actions. The proposed amendment would reinforce the requirement for existing actions which are necessary to achieve water quality objectives in the near coastal ocean.

3.2.9 Proposed Changes to the 2009 Ocean Plan

Introduction (C)(2) (“Applicability”) should be amended to read as follows (italics reflect suggested changes):

“This plan is not applicable to discharges to enclosed bays and estuaries* or inland waters, nor is it applicable to vessel wastes, nor is it applicable to the control of dredged* material.”*

Section (III)(I)(5) should be added as follows:

5. Vessels

- a. Discharges of hazardous waste (as defined in California Health and Safety Code Section 25117 et seq. [but not including sewage]), oily bilgewater, medical waste (as defined in Section 117600 et seq. of the California Health and Safety Code) dry-cleaning waste, and film-processing waste from large passenger vessels and oceangoing vessels are prohibited.

- b. Discharges of graywater from large passenger vessels are prohibited.
- c. Discharges from oceangoing vessels of graywater, if there is sufficient holding capacity to retain graywater, are prohibited. Vessels subject to the federal NPDES Vessel General Permit (VGP) which are not large passenger vessels must follow the best management practices for graywater as required in VGP Section 2.2.15, including the use of only those cleaning agents (e.g., soaps and detergents) that are phosphate-free, non-toxic, and non-bioaccumulative. In addition, the presence of these cleaning agents or their residues in graywater discharges may not cause extreme shifts in receiving water pH.
- d. Discharges of sewage and sewage sludge from vessels are prohibited in No Discharge Zones promulgated by U.S. EPA.

Section (III)(K) should be added as follows:

K. Implementation Provisions for Vessel Discharges

1. Vessel discharges must comply with State Lands Commission (SLC) requirements for ballast water discharges and hull fouling to control and prevent the introduction of non-indigenous species, pursuant to Public Resources Code (PRC) Sections 71200 et seq.
2. Discharges incidental to the normal operation of large passenger vessels and oceangoing vessels must be covered by and comply with an individual or general NPDES permit.
3. Vessel discharges must not result in violations of water quality objectives in this plan.

The following definitions should be added to Appendix I:

GRAYWATER is drainage from galley, dishwasher, shower, laundry, bath, and lavatory wash basin sinks, and water fountains, but does not include drainage from toilets, urinals, hospitals, or cargo spaces.

LARGE PASSENGER VESSELS are vessels of 300 gross registered tons or greater engaged in carrying of passengers for hire. The following vessels are not large passenger vessels:
(1) Vessels without berths or overnight accommodations for passengers;
(2) Noncommercial vessels, warships, vessels operated by nonprofit entities as determined by the Internal Revenue Service, and vessels operated by the state, the United States, or a foreign government;
(3) Oceangoing vessels, as defined in Appendix I (e.g. those used to transport cargo).

NO DISCHARGE ZONE (NDZ) is an area in which both treated and untreated sewage discharges from vessels are prohibited. Within NDZ boundaries, vessel operators are required to retain their sewage discharges onboard for disposal at sea (beyond three miles from shore) or onshore at a pump-out facility.

OCEANGOING VESSELS (i.e., oceangoing ships) means private commercial vessels of 300 gross registered tons or more calling on California ports or places.

3.3 ISSUE 3: NON-SUBSTANTIVE CHANGES

3.3.1 Issue

The proposed non-substantive changes include replacing an incorrect figure, renaming tables, and minor grammatical and formatting changes.

3.3.2 Background

Maps of California's ocean features were added to the 2009 Ocean Plan in Appendix VIII. It was discovered after the adoption of the 2009 Ocean Plan that the Aliso Water Management Agency's ocean outfall was mapped at incorrect coordinates (Figure VIII-5, 2009 Ocean Plan). Also related to the Southern California Bight (Figure VIII-5) was the adoption of new MPAs in the southern coast region by the California Department of Fish and Game (DFG) in December of 2010, making the map obsolete.

Tables A and B have been a part of the Ocean Plan since it was first adopted in 1972. Tables C and D were added to the Ocean Plan in 1983. Until the 2001 Ocean Plan was adopted, Tables A-C were found in Chapter IV, in alphabetical order according to the tables' names. The Ocean Plan underwent major formatting changes in 2001 and the Tables were moved to other chapters: Table A moved to Chapter III.B, Table B to Chapter II.D, and Table C to Chapter III.C. These formatting changes caused the tables to no longer be in alphabetical order, with, for example, Table B presented in the text before Table A.

3.3.3 Issue Description

Staff is proposing updates to Figure VIII-5 to reflect the correct location of Aliso Water Management Agency's ocean outfall and the newly adopted MPAs. In addition to replacing Figure VIII-5, staff is also proposing the addition of the web address for the maps which have recently been posted on the State Water Boards website.

Tables A, B, C, and D do not appear in alphabetical order. Renaming the tables so that they appear in order will clear any confusion caused by the formatting changes made in 2001. References to the tables will need to be updated accordingly. Staff proposes to change Table A to Table 2, Table B to Table 1, Table C to Table 3, and Table D to Table 4.

The other proposed changes include: Changing all reference of SWRCB to State Water Board; RWQCB to Regional Water Board; changing references to Chapter III(I) on pages 5 and 23 to the correct reference of Chapter (III)(J); and to change MI to ml and PH to pH in Table-A, which are the correct abbreviations.

3.3.4 Alternatives for State Water Board Action and Staff Recommendation

1. No Action. Do not make any nonsubstantive changes to the Ocean Plan
2. Amend Ocean Plan to include correct map of Southern California, to rename Tables A-D, and to make other minor corrections.

3.3.5 Staff Recommendation

Alternative 2: Amend Ocean Plan to include correct map of Southern California, to rename Tables A-D, and to make other minor corrections.

3.3.6 Environmental Analysis

The proposed amendments are non-substantive administrative changes, editorial in nature, and will not have any regulatory effect. Because there is no possibility that the proposed edits may have a significant effect on the environment, these amendments are not subject to the California Environmental Quality Act, Public Resources Code section 21000 et seq. (Cal. Code Regs., tit. 14, § 15061, subd. (b)(3)).

3.3.7 Peer Review

The non-substantive administrative changes are not scientifically based, do not constitute a standard, and are thus exempt from the peer review process.

3.3.8 Proposed Ocean Plan Amendment

All proposed changes are shown in Appendix A of this document.

The following changes are found on the following pages of the 2009 Ocean Plan:

Figure VIII-5 (in Appendix VII, on page 50) was replaced with an updated map.

Chapter III(I) changed to Chapter (III)(J) on pages 23.

Table A was changed to Table 2 on the following pages: v, vi, 12, 13, 23.

Table B was changed to Table 1 on the following pages: v, vi, 6, 7, 8, 9, 10, 13, 14, 18, 19, 21, 22, 23, 41, 58.

Table C was changed to Table 3 on the following pages: vi, 13, 14.

Table D was changed to Table 4 on the following pages: vi, 21, 22.

SWRCB changed to State Water Board on the following pages: 1, 4, 5, 12, 13, 15, 23, 30, 37, 38, 39, 40.

RWQCB was changed to Regional Water Board on the following pages: 14, 37, 38.

PH was changed to pH on page 12 (In Table 2 / Table A).

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REFERENCES

- ⁱ Wat. Code §13000 et seq
- ⁱⁱ See *id.* §13000
- ⁱⁱⁱ See *id.* §13170.
- ^{iv} See *id.* §13140 et seq.
- ^v California Ocean Plan (2005), chs. 1 & 2.
- ^{vi} Wat. Code §13142.
- ^{vii} See *id.* §§13263, 13377.
- ^{viii} Wat. Code, div. 7, ch. 5.5.
- ^{ix} *Id.* §13377; see also Cal. Code Regs., tit. 23, §2235.2.
- ^x *Id.* §13160.
- ^{xi} *Id.* §§13372, 13377. U.S. EPA's permit regulations are contained in 40 CFR. parts 122, 123, and 124.
- ^{xii} Public Resources Code, §21000 *et seq.*
- ^{xiii} Cal. Code Regs., tit. 14, § 15002(a).
- ^{xiv} <http://www.dfg.ca.gov>
- ^{xv} <http://farallones.noaa.gov/about/welcome.html>
- ^{xvi} <http://pubs.usgs.gov/fs/FS-005-96/>
- ^{xvii} <http://www.fws.gov/refuges/profiles/index.cfm?id=81641>
- ^{xviii} <http://www.prbo.org/cms/171>
- ^{xix} <http://pubs.usgs.gov/of/2001/of01-062/>, <http://walrus.wr.usgs.gov/farallon/radwaste.html>,
- ^{xx} http://www.parks.ca.gov/?page_id=523
- ^{xxi} http://www.parks.ca.gov/?page_id=1124
- ^{xxii} montereybay.noaa.gov
- ^{xxiii} sanctuaries.noaa.gov/science/conservation/zones.html
- ^{xxiv} montereybay.noaa.gov
- ^{xxv} <http://www.usgs.gov/newsroom/article.asp?ID=2560>
- ^{xxvi} www.nps.gov
- ^{xxvii} channelislands.noaa.gov/manplan/boundaries.html
- ^{xxviii} channelislands.noaa.gov
- ^{xxix} www.catalinachamber.com/catalina/where-is-catalina
- ^{xxx} http://www.navair.navy.mil/ranges/SEA/docs/SEA/FS_SNI.pdf
- ^{xxxi} www.scisland.org
- ^{xxxii} California Department of Fish and Game, *State and Federally Listed Endangered and Threatened Animals of California* Biogeographic Data Branch, California Natural Diversity Database, January 2011
- ^{xxxiii} [Model monitoring program for large ocean discharges in southern California.](#) 2001. K Schiff, J Brown, S Weisberg. Technical Report 357. Southern California Coastal Water Research Project. Westminster, CA.
- ^{xxxiv} [Model monitoring for small publicly-owned treatment works in the San Diego region.](#) 2007. Southern California Coastal Water Research Project. Technical Report 518. Southern California Coastal Water Research Project. Costa Mesa, CA.
- ^{xxxv} [Model monitoring program for municipal separate storm sewer systems in southern California.](#) 2004. Model Monitoring Technical Committee. Technical Report 419. Southern California Coastal Water Research Project. Westminster, CA.
- ^{xxxvi} *Inventory of Ocean Monitoring in the Southern California Bight.* 2001. KC Schiff, SB Weisberg, VE Raco-Rands. pp. 212-217 in: S.B. Weisberg and D. Elmore (eds.), Southern California Coastal Water Research Project 1999-2000 Annual Report. Southern California Coastal Water Research Project. Westminster, CA.
- ^{xxxvii} <http://cfpub.epa.gov/npdes/stormwater/munic.cfm>
- ^{xxxviii} http://www.epa.gov/npdes/pubs/vessel_vgp_permit_november%202010.pdf
- ^{xxxix} http://www.epa.gov/npdes/pubs/vessel_S2766.pdf